# J. Carlos Santamarina


*Citizenship:* *USA and Argentina*
*Address:* *1559M, KAUST, Thuwal 23955, KSA*
*Email:* *jcs@gatech.edu*
*Website:* *https://egsel.ce.gatech.edu/*

*Google Scholar:* *https://scholar.google.com/citations?user=h9S80WwAAAAJ&hl=en*
*Research Gate:* *https://www.researchgate.net/profile/J_Santamarina*
*Web of Science ID:* *ABF-6381-2020*
*Scopus ID:* 7005785506
*ORCID ID:* *0000-0001-8708-2827*


***Contents:***



## I. EARNED DEGREES

| | | |
|---|---|---|
| Ph.D. 1987 | Purdue University, IN | Civil Engineering |
| MSc 1984 | University of Maryland, MD | Civil Engineering |
| Civil Eng.1982 | Universidad Nac. Córdoba, Argentina | Civil Engineering |

## II. EMPLOYMENT

| | | |
|---|---|---|
| 2023-Present | Professor & Clough Chair | Georgia Institute of Technology |
| 2017-2020 | Director | Energy Resources and Petroleum Eng. Program |
| 2015-2022 | Associate Director | Al-Naimi Petroleum Engineering Research Center |
| 2015-2022 | Professor | KAUST, Physical Science and Engineering Division |
| 2002-2015 | Goizueta Professor | Georgia Institute of Technology |
| 1998-2015 | Professor | Georgia Institute of Technology |
| 1996-1998 | Associate Professor | Georgia Institute of Technology |
| 1992-1995 | Associate Professor | University of Waterloo, Ontario |
| 1987-1991 | Assistant Professor | Polytechnic University, Brooklyn |

## III. HONORS AND AWARDS

*USA & Abroad*

- Alumni Achievement Award 2024, Lyles School of Civil Engineering, Purdue University.
- Outstanding article 2022: "Fine-Grained Sediment Characterization and Process Monitoring Using Nuclear Magnetic Resonance (NMR)", with Budi Zhao, ASTM Geotechnical Testing Journal.
- Best paper 2022: *A Constitutive Mechanical Model for Gas Hydrate Bearing Sediments Incorporating Inelastic Mechanisms* (with M. Sánchez and X. Gai - 2017), Computers and Geotechnics.
- Best paper 2021: *The critical state line of nonplastic tailings* (with Luis Torres Cruz – 2021). (1) Jennings Award, South African Institution of Civil Engineering SAICE; (2) Quigley Award Honourable Mention, Canadian Geotechnical Society.
- Tarek Al-Qasabi Award, Excellence in Civil Engineering in Saudi Arabia (2019 - with J. Park)
- KGS Award, Korean Geotechnical Society (2017)
- ASTM International Hogentogler Award (2016)
- ALERT 2012 Research Medal, Europe (2012)
- IACMAG Award (2008)
- ASTM International Hogentogler Award (2005)

*Argentina*

- Doctor Honoris Causa, U. Nacional de Córdoba, Argentina (awarded November 2015)
- RAICES Award, Technology and Innovation, Ministry of Science and Technology, Argentina (2012)
- Member, Academia Nacional de Ingeniería, Argentina (Nat. Academy Engineering - Elected in 2005)
- Member, Academia Nacional de Ciencias Exactas, Físicas y Naturales, Argentina (National Academy of Sciences – Elected in 2003)
- Honorary Professor, U. Nacional de Córdoba, Argentina (awarded 2003)

*Named lectures* (see complete list of keynote lectures in Section vii)

- Ardaman-Wissa Lecture, Tampa FL (2025)
- Casagrande Lecture, Panamerican Conference, Chile (2024)
- Hennes Lecture, University of Washington (2024)
- Pedro de Alba Lecture, U. New Hampshire (2023)
- ISSMGE Honour Lecture, Energy Geotechnics (2022)
- Bishop Lecture, Sydney (2022)
- Prague Geotechnical Lecture, Czech Republic (2015)
- Milligan Lecture, Queens University, Canada (2015)
- Terzaghi Lecturer 50th (2014) - https://www.youtube.com/watch?v=YQGdw_-mOyc
- Montero Olarte Lecture, Bogota (2014)
- Leonards Lecture, Purdue University (2012)
- BGA Touring Lecturer, British Geotechnical Association (2012)
- Osterberg Lecture, Northwestern University (2012)
- Weston Lecture, University Wisconsin-Madison (2011)

- Shaw Lecture, North Carolina State University (2011)
- Tewkesbury Lecture, U. Melbourne (2010)

*Others*

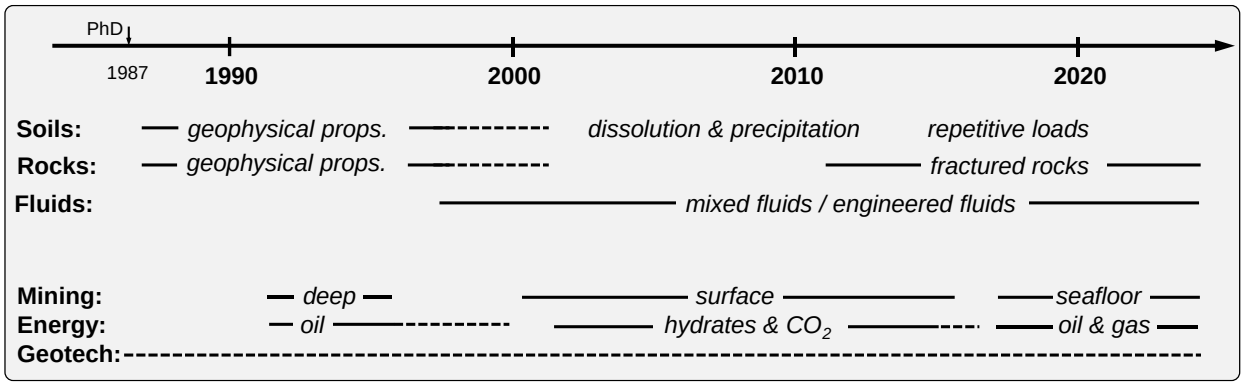
- University of Waterloo, Distinguished International Visiting Scholar Award (2021)
- TEDx: Grit & Academic Success (2021) https://www.youtube.com/watch?v=xSc3oTWttKQ
- Create to become, Ithra 2019: https://www.youtube.com/watch?v=Kvdakz9dftE
- Geo-Legend (reported in GeoStrata 2015)
- TEDx: Creativity (2012) https://www.youtube.com/watch?v=8JH-Xh55iEg
- SAIG Honorary Member, Argentinean Geotechnical Association (2011)
- World Innovation Foundation, Fellow (since 2005)
- Who's Who: in America (Marquis Research, 1996); Among Hispanic Americans (Gale Research,1995); Professionals in America (Empire, 2004). Executives and Leaders (Manchester, 2004)

*Within Home Institutions*

- CEE Graduate Mentorship Award (2023)
- CEE Research Innovation Award, Georgia Institute of Technology (2013).
- Goizueta Foundation Faculty Chair (2002-2014).
- Sustained Research Award, Georgia Institute of Technology (2002).
- Research Program Development Award, Georgia Institute of Technology (1998).
- Research Award, Department of Civil and Environmental Engineering, Polytechnic U. (1991)
- Sigma Xi, Grant-in-aid, University of Maryland (1984).
- Maple Point Foundation Award, Purdue University (1986).
- Research Fellow, Collapsible soils, Cordoba State Highway Administration, Argentina (1980-1981).

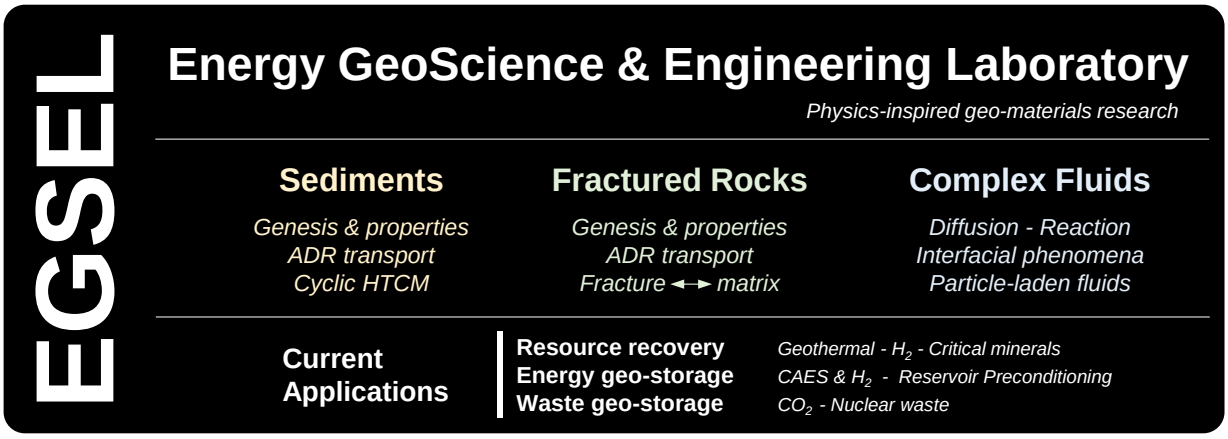
# IV. RESEARCH

## A. TRAJECTORY



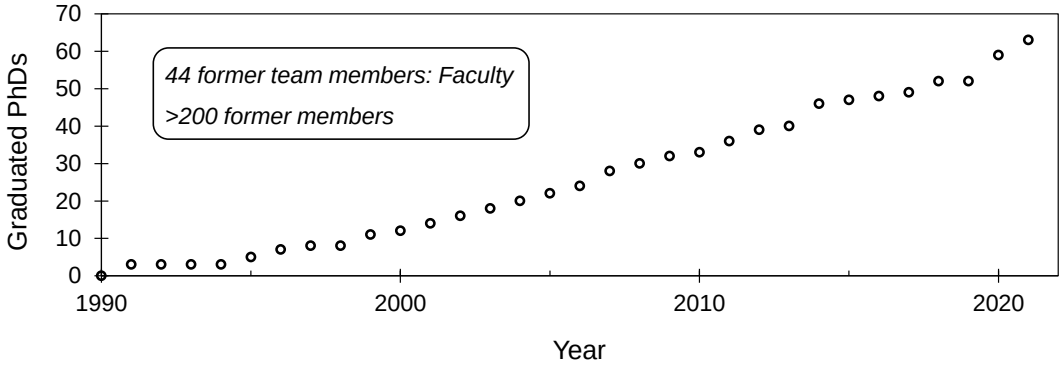

## B. UNDERLYING CAREER-LONG THEME: *"Physics-inspired geo-materials research"*

## C. CURRENT RESEARCH THEMES AND KEY OBJECTIVES

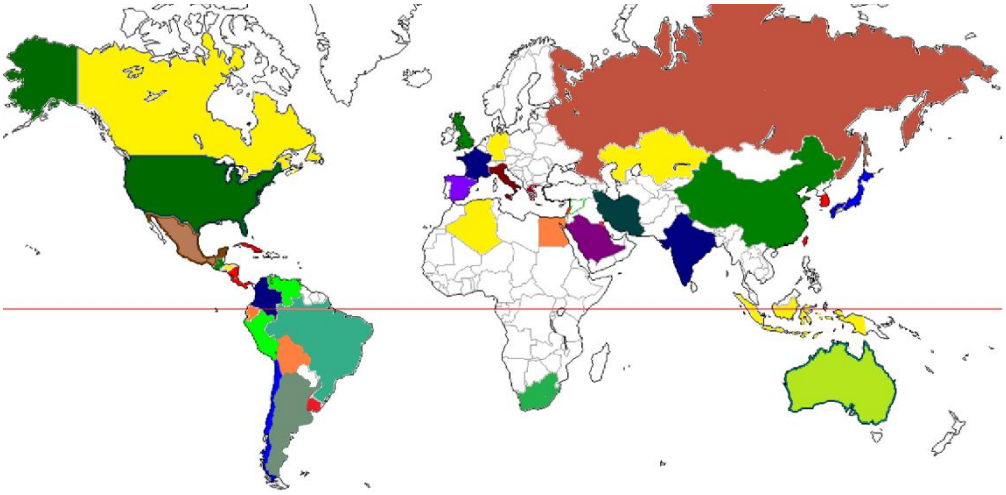


## V. ADVISING AND TEACHING (Hosting)

**In numbers:**




**Country of Origin:**



**Host: Visiting Scholars (Extended Stays)**

- Denis Kalumba, University of Cape Town, South Africa.
- Jingsheng Lu, Chinese Academy of Sciences, Guangzhou Institute of Energy Conversion (1 year), Methane hydrates.
- Chih-Ping Lin, National Chiao Tung University (2021 – 6 months). Lab geophysics.
- Hyunki Kim, Kookmin U., South Korea (2020 – 6 months). Data analysis
- Kam Ng, University of Wyoming (2020 – 4 months). Carbonates.
- Khalid Alshibli, University of Tennessee (2019 – 6 months). Fines and mixed fluids.
- Luis A. Torres Cruz, U. Witwatersrand, South Africa (2018 – 6 months). Soil properties.
- Hosung Shin, Ulsan University (2016 – 1 year). Fractured Rocks: Coupled HM.
- Dante Fratta, U. Wisconsin, USA (2015-2016, 6 months). Geophysical characterization.
- Hyunki Kim, Kookmin U., South Korea, (2014-2015).
- Miriam Martin Ruiz, Repsol, Madrid, Spain, (2014). Oil Sands.
- Enrique Asanza Izquierdo, Escuela de Caminos, Madrid, Spain (2014). Gassy sediments
- Cuiying Lu, Faculty, Yulin University, China, (2012-2013). Hydrate Bearing Sediments.
- Norimasa Yoshimoto, Yamaguchi U., Japan, (2011-2012). Energy Efficiency in Geotechnology.

- Eun Seok Bang, KIGAM, South Korea, (2010), $CO_2$ leak detection.
- Richard Fragaszy, National Science Foundation, USA, (2008), Geo-Sustainability.

## A. GUIDANCE - MENTORSHIP

**Research Engineers/Scientists**

- Qi Liu (2018 - 2023). Complex fluids in porous media.
- Claire Birnie (2020 - 2021). Data analyst – Inverse problems.
- Thomas Finkbeiner (2016-2020). Fractured Rock. Research Professor: KAUST, Saudi Arabia
- Junghee Park (2018-2020). Phenomena in granular materials (seafloor)
- Jiming Jiang (2016-2020). Advanced sensing systems (laboratory, onshore and offshore).
- Marco Terzariol (2015-2019). Advanced subsurface sensing and characterization.
- Andrea Mezencevova (2011-2012). Geo-chemistry – Gamma ray measurements.
- Alexander Salman (1991). Sources of stress waves for geotechnical tomography.

**Post Doctoral Fellows** *(not from our own group)*

- Gyeol Han (2022-present). Fractured rocks
- Andrea Muñoz Ibáñez (2022-present). Fractured rocks. Marie Curie Fellow.
- Jooyoung Im (2021-present). Engineered geomaterials: Nuclear waste disposal.
- Ahmed Abdelaziz (2020-2023). Complex fluids: Repetitive fluid flow. Res. Scientist. Sheffield University, UK.
- Evgeniya Volkova (2022-2023). Molecular dynamics - Clays and Shales. Res. Scientist, RSRC KAUST.
- Joshua Smith (2017-2022). Deep sea (deeps, seeps, brine pools, salt glaciers). Res. Scientist, USA NRL.
- Wonjun Cha (2022). Fractured rocks. Faculty: U. of Birmingham, UK.
- Viacheslav Sviridov (2019 – 2020). Shales.
- Budi Zhao (2017-2019). Mixed fluid phenomena. Faculty. University College Dublin.
- Xunchang Fei (2016–2018). Sediments: Coupled HCM. Faculty. NTU, Singapore.
- Anant Ghumare (2016-2018). Engineered fluids. Samaa Technologies, Damnam, Saudi Arabia.
- Hyung-Koo Yoon (2011-2012). Methane hydrates. Faculty. DaeJeon U, South Korea.
- Changho Lee (2008-2010). Methane hydrates. Faculty. Chonnam National University, South Korea
- Rafael Monroy (2009). Mixed fluid conditions - Energy. Faculty. Politécnica de Cartagena, Spain.
- Juan J. Claria (1/2004-8/2004). Advanced laboratory testing. Faculty. U.N. Cordoba, Argentina
- Franco Francisca (1999 and 9/2002-1/2004). Methane Hydrates. Faculty. U.N. Cordoba, Argentina

**Ph.D. Student Guidance**

*Graduated (graduation year in parenthesis – current position at the end)*

- Jose Davalos (2024). Energy fluids – Mineral interaction. Scientist – Sinopec.
- Menwei Liu (2024). From clays to shales. PostDoc, DOE.
- Camilo Guerrero-Castro (2024). Shales: adsorption and transport. GeoSyntec
- Zhao Xia (2024). CO2 Geological Storage: Dissolution-Precipitation. PostDoc, UT Austin.
- Marcelo Benitez (2023). CO2 gravity driven EOR (Nanoparticles & organo-bentonites). Post-Doc – KAUST.
- Gloria Castro (2021). Soil Corrosivity – Saturation and Fines effects. Faculty: Strathclyde University
- Clara I. Modenesi (2021). Hot and Cold Seeps in the Red Sea. Fugro – Holland.
- Wonjun Cha (2021). Repetitive mechanical and environmental loads. Post Doc – KAUST.
- Andika Perbawa (2021). Rock properties at seismic frequencies. KAUST (Vahrenkamp's Lab).
- Farizal Hakiki (2020). Carbonates: NMR and broad-frequency permittivity. Post Doc – KAUST: Multiphysics fluid fingerprinting.
- Ahmed Abdelaziz (2020). Fines migration - circulation loss. Post Doc – KAUST: Repetitive fluid flow.
- Eduardo Gramajo Silva (2020). Shales – Unconventionals , Scientist – Sinopec.
- Adrian Garcia (2020). Fractured rocks – Geophysical properties. DoE Scientist at USGS.
- Rached Rached (2020). Fractured rocks – Dissolution & precipitation. Scientist – Sinopec.
- Alejandro Cardona (2020). Fractured rocks: Fluid flow. Post-Doc UT Austin.
- Marisol Salva (2020). Advanced sediment characterization – IT. FUGRO, Australia.
- Yuanjie Shen (2018). Repetitive environmental loading. Post-Doc. NTU, Singapore.
- Zhonghao Sun (2018). Capillary Phenomena: Pore and Grain Scale. Post-Doc. UT Austin, USA. Faculty: Xi'an Jiaotong University.
- Qi Liu (2018). Particle-Laden Fluids: Fundamentals & Engineering Applications. Current: Director Research Center, China Huadian Corporation.
- Ahmad Kahiel (2018). Sand-fines interpenetration. PhD at AUB Beirut, Lebanon (co-advised – S. Sadek). Faculty: American Univ. Middle East, Kuwait.
- Jung-Hee Park (2017). Repetitive mechanical loading. Post-Doc. KAUST. Current: Faculty, Incheon National University, South Korea.
- Liang Lei (2016). Hydrate-Bearing Fine-Grained Sediments. Post-Doc. NETL-DOE, USA. Faculty: Westlake University, Hangzhou, China.
- Shahrzad Roshankhah (2015). Geomaterials at HP/HT. Faculty: University of Utah.
- Marco Terzariol (2014). Hydrate Bearing Sediments. Academic Scientist: IFREMER.
- Xingwei Ren (2014). Sediment permeability. (Lead Advisor: Dr. Y. Tang, Tongi U.). Faculty. U. Geosciences - Wuhan, China.
- Lucio G. Cruz Velasco (2014). Coupled HCTM in resource recovery (Co-Advisor: Dr. A. Lizcano, U. Andes). Faculty: U. del Cauca, Colombia.
- Song Hun Chong (2014). Subsurface Mass Loss. Faculty. Sunchon National University, South Korea
- Junbong Jang (2014). Gas Charged Sediments. Faculty. Dong-A University, South Korea.
- Efthymios Papadopoulos (2014). Inverted Base Pavements. Consultant. SDG, Palo Alto, USA.
- Sheng Dai (2013). Hydrate Bearing Sediments – Characterization. Faculty. Georgia Tech, USA.

- Cesar Pasten (2012). Energy Geotechnology: Repetitive loading. Faculty. Universidad de Chile, Chile.
- Seunghee Kim (2012). Carbon Geological Storage. Faculty. University of Nebraska, USA.
- Minsu Cha (2012). Mineral Dissolution. Faculty: Jeju National University, South Korea (formerly at Texas A&M University, USA)
- Nicolas Espinoza (2011). CO2 sequestration. Faculty. U. Texas Austin, USA.
- Jaewon Jang (2011). Gas Production from Methane Hydrates. Faculty. Hanyang University, South Korea.
- Douglas Cortes (2011). Inverted Base Pavements. Faculty. New Mexico State University, USA.
- Jong Won Jung (2010). Gas Production from Methane Hydrates. Faculty. Chungbuk Nat. University, South Korea.
- Hosung Shin (2009). Discontinuities. Faculty. Ulsan University, South Korea.
- Mario Camilo Torres (2009), Shale stability (Lead Advisor: A. Alarcon). Faculty. U. Nac. Colombia, Colombia.
- Claudia Festa (2008). High Resolution Geophysical Testing (Lead Advisor: S. Foti, Politecnico de Torino, Italy). Consulting.
- Tae-Hyuk Kwon (2008). Methane Hydrates (Lead Advisor: Gye Chun Cho). Faculty. KAIST, South Korea.
- Armando Imhof (2007). Based at U. Nacional de Cuyo, Argentina). Faculty. U. Nacional de San Juan, Argentina.
- Veronica Rebata Landa (2007). Bio-Mediated Geochemical Effects. Consulting. Mexico.
- Joo-Yong Lee (2007). Hydrate Bearing Sediments. Senior Research Lead. KIGAM, South Korea.
- Maria Cristina Herrera-Ardila (2007). Volcanic Ash Soils (Lead Advisor: Dr. A. Liscano - U. Andes). Research Division, John Deere, Pretoria, South Korea.
- Ahmed Bayoumi Mousa (2006). Sediment Character. (Inversion). Faculty. Monash U, Malaysia.
- Guillermo A. Narsilio (2006). Spatial Variability - Conduction. Faculty. Melbourne U, Australia.
- Hyunki Kim (2005). Spatially Varying Soils – Mechanics. Faculty. Kookmin U, South Korea.
- Tae Sup Yun (2005). Hydrate-Bearing Sediments. Faculty. Yonsei University, South Korea.
- Hong Chang (2004. Lead Advisor: L. Germanovich). Hydraulic Fractures.
- Angel Palomino (2004). Fabric in Fine Grained Materials. Faculty. U. Tennessee., USA.
- Jong-Sub Lee (2003). High-resolution Geophysics in Small Scale Model Studies. Faculty. Korea U, South Korea.
- Jose Alvarellos (2003). Capillary Phenomena. Centro Tecnologia, REPSOL, Spain.
- Julio R. Valdes (2002). Fines Migration and Formation Damage. Faculty. San Diego State U, USA.
- Maria S. Guimaraes (2002). Mining. EPRI Electrical Power Research Institute, USA.
- Gye Chun Cho (2001). Partially Saturated Particulate Materials. Faculty. KAIST, South Korea.
- Yu-Hsing Wang (2001). Energy Loss Granular Materials. Faculty. HKUST, Hong Kong.
- Americo Fernandez (2000). Tomographic Imaging Stress Fields. Geomechanics Int'al, Houston, USA.
- Andre Zerwer (1999. Co-supervisor: M.A. Polak). Surface Wave Testing. Golder Assoc, Canada.
- Katherine Klein (1999 – Deceased 2010). Clay Behavior. Faculty. U. Toronto, Canada.

- Dante Fratta (1999). Energy Coupling in Geomaterials. Faculty. U. Wisconsin-Madison, Canada.
- Farshad Gheshlaghi (1997). Tomographic Inversion. Rogers Communications, Ontario, Canada.
- Victor Rinaldi (1996). Soils Permittivity (Lead Advisor: E. Redolfi). Faculty. U.N. Cordoba, Argentina.
- Giovanni Cascante (1996). Micromechanics Experimental Research. Faculty. U. Waterloo, Canada.
- Moheb Fam (1995. Deceased: 2001). Monitoring Geo-processes. Faculty. Cairo U, Egypt.
- Mahmoud Aloufi (1995). Wave Propagation in Particulate Media. Retired General. Saudi Arabia.
- Faouzi Ahtchi Ali (1991). Settlement of Footings on Sands. Tetra Tech Inc., Maryland, USA.
- Kambiz Akhoundi (1991). Creativity in Civil Engineering. J.P. Morgan, New York, USA.
- Mark Cesare (1991. Co-supervisor: C. Turkstra). Risk Based Bridge Management. FDH Engineering, USA.

*In Progress*

- Carlos Hernandez. From Sediments to Rocks
- Ferdinand Calaunan, Clays - Nuclear Waste Disposal
- Joya Rani Mallick, Hydrogen - Natural, Stimulation, Geo-Storage
- Jun Yeop Yeo, Hydrogen - Gas Flow
- Haochen Huang. Drilling - Brittle to Ductile Transition
- Weiling Cai, Hydrogen (Natural)
- Gyuseong Woo, Coupled GeoProcesses

*Team Support*

- Jennifer Freeman (2023 – present). GaTech activities.
- Gabrielle Abelskamp (2016 - 2022). KAUST activities.
- Amany Ahmed (2018 - 2020). Travel and financial support.
- Youshra Samih (2018). Startup IT support and firmware.
- Amna Masood (2015-2018): Administration support.

**Visiting Students: Thesis Research**

- Adnan Aftab (2021-2022). Hydrogen and Ammonia Geo-Storage, Curtin University, Australia.
- Qudsia Kanwal (2022). Energy Waste, Tsinghua University, China.
- Breno Nobrega (2020). Fractured Rocks, Brazil.
- Dimitra Mitilinaiou (2020). Creeping salt glaciers in the Red Sea. U. Grenoble, France.
- Carlos Hernandez (2020). Proppants and crushing. U. Central, Venezuela.
- Woojin Han (2020). Foamed cements. Korea U., South Korea.
- Felwa Mugayel (2019). Nanoparticles (bentonites). Alfaisal U, Saudi Arabia
- Dong Hwa-Noh (2018). Polymers and sands. PhD at KAIST, South Korea
- Christian Wimmer (2018 - Co-supervised with T. Finkbeiner). Shales. University of Leoben, Austria
- Sang Yeob Kim (2018). Repetitive freezing cycles. Korea U, South Korea
- Salma AlKaff (2018). Geo-physics. Alfaisal U, Saudi Arabia

- Aseel Alsantely (2018). NMR testing. Alfaisal U, Saudia Arabia
- Nicolò Serafino (2017). Anhydrite: Implications. U. Joseph Fourier, Grenoble, France.
- Marco Gioiello (2017). Layer-bound fractures in anticlines. U. Joseph Fourier, Grenoble, France.
- Murtadha Y. Al Malallah (2017). Red Sea sediments.
- Josebel Cordero (2016). Desiccation cracks. PhD at UPC Barcelona, Spain.
- Gloria Castro Quintero (2016). IT tool and database for rock properties. U Cauca, Colombia
- Gerald Useche (2016). Research planning and management. UPC-Barcelona, Spain
- Mohamed Bourizk (2016). Repetitive fluid pressure variations. U. Joseph Fourier, Grenoble, France.
- Carlo Butera (2016). Well completion and decommissioning. U. Joseph Fourier, Grenoble, France.
- Stefanos Athanasopoulos (2013). Grouting and leakage. U. Joseph Fourier, Grenoble, France.
- Alessio Savioli (2011). Open Mode Discontinuities. U. Joseph Fourier, Grenoble, France.
- Sylvain Cardon (2010). CO2 Storage: Dissolution and Ko. U. Joseph Fourier, Grenoble, France.

**M.S. Student Guidance**

- Cristhian F. Andrade (2020). Mixed fluids: contact angle hysteresis – Contact line pinning.
- Chuangxin Lyu (2018). Enhanced Bathymetry.
- Ainur Sabirova (2017). Diffusiophoresis and Liesegang Bands.
- Mahruri Mahruri (2017). Hydro-mechanical coupling (Co-Supervision: T. Finkbeiner).
- Nicolas Augsburger (2017). Bio-chemo processes – Red Sea sediments.
- Seth Mallett (2015). Hydrate Bearing Clays. (PhD under J.D. Frost). Faculty, Denver Technical College
- Aswathy Sivaram (2012). $CO_2$ Leakage. Golders.
- Harshad Phadnis (2009). Biological processes in energy geotechnology.
- Chen-Shen Chang (2007). Geotechnical Issues in Renewable Energy.
- Ana Isabel Martin (2004). Thermal Properties of Hydrate Bearing Sediments.
- Jake Dodds (2004). Particle Shape, Origin and Implications.
- Vinay Uchil (2001). Crushed Stone Related research.
- Vasilis Vandolas (1998). Stress redistribution in aging granular media.
- Katherine Klein (1995). Broadband Permittivity Measurements (listed under PhD).
- Dante Fratta (1995). Waveguide Multimode, Wide-band Testing of Soils (listed under PhD).
- Ashraf M. Shubair (1994). Resolvability: Ray-Based Inversion of Refection Data.
- Victor Rinaldi (1992). Complex Permittivity of Soils and Contaminants (listed under PhD).
- Demitrios Tsolkas (1991). Wave Propagation in Granular Materials: Pulse – vs- Resonant Testing.
- Peter Tani (1991). Monitoring Shafts and Tunnels – The Baltimore Metro.
- Wakim Yasmine (1991). Ground Modification with Electromagnetic Waves.
- Toufic Wakim (1990). Geotechnical Tomography.
- Victor Sanches (1988). The Geology of New York City and Metropolitan Area.

## Undergraduate Research Students

*At Georgia Institute of Technology – Atlanta, GA (since 2023)*

| | |
|---|---|
| Leyna Westbrook (2024) | Dissolution in geothermal (VIP student) |
| Aurora Flegel (2024) | Clays for nuclear waste (VIP student) |
| Boyuan Chen (2024) | Software for X-ray CT (VIP student) |
| Akash Satya (2024) | Energy fluids (VIP student) |
| Amy Tran (2024) | Fracture seal (VIP student) |
| Poorna Kadam (2024) | Natural H2 (VIP student) |
| Ty Vasquez (2024) | Critical minerals |
| Joseph Loza (2024) | Rare Earth Minerals |
| Rohan Faizer (2024) | Rare Earth Minerals (PURA Student Assistant) |
| Hongyu Holin Xue (2023) | World energy data |
| Enoch Woldu (2023) | Complex permittivity (visiting from U. Chicago - Physics) |

*At Georgia Institute of Technology – Atlanta, GA (until 2015)*

| | |
|---|---|
| David Rhodes (14) | Microelectronics – Autonomous control |
| Nicolas Augsburger (14) | Bio-inspired lab |
| Charles Leigh (14) | Microelectronics – Sensors – Geoprocesses |
| Adrian Garcia (13-14) | Inverted base pavements |
| Antonella Ungari (13) | Fly ash diagenesis |
| Clemente Quinones (13) | Petroleum: well cementation |
| Jose Luquin (13) | Repetitive loading |
| Kevin Olson (10) | Energy: $CO_2$ geological storage |
| Jason Kraft (10) | Hydrate lens formation in sediments |
| Amanda Magabo (08-10) | Energy minimization - Bio-mimetic: roots as deep foundations |
| Tomas Carbini (08-10) | Geo-Thermal studies - Labview-based lab automation |
| Stephen Munna (08) | Granular material characterization |
| Cesar Gutierrez (07-08) | Energy minimization - Bio-mimetic: roots as deep foundations |
| Menadre Sofer (06-08) | Bio-geo-technology |
| Gary Wu (06-07) | Webpages – Sharing geotechnical information |
| Sebastian Guerrero (06-07) | From dominos to creep in sands |
| Allison Passione (06) | Energy minimization - Bio-mimetic: ant tunneling |
| Jaime A. Latorre (06) | Energy minimization - Bio-mimetic: ant tunneling |
| Peter Pietrowski (05) | Sensors and information |
| Bradley Cox (05) | Grain shape and flow |
| Long Truong (05) | Bio-cementation of soils |
| Erik Houston (05) | Stochastic FEM |
| Anthony Argote (04-06) | Engineered soils: mixtures |
| Douglas Cortes (04-06) | Particle shape – 3D imaging |
| Jonas Kammoe (04) | Scale effects in seepage |
| Elizabeth Saltmarsh (03) | Terminal densities (NASA program / now GTech) |
| Gissette Forte (01) | Creativity in engineering |
| Suzanne Scribner (00-01) | Methane hydrates – Vessel |
| Eileen Prenke (99-00) | Specific surface - Hydraulic fracture |

| | |
|---|---|
| Emily Hollies (99) | Spatial variability and soil behavior |
| Adrian Parsaud (99) | Formation damage - Transparent medium |
| Eli Diaz (99) | Alkali-silica reaction |
| Chris Corrigan (99) | Dynamic effects |
| John Wise (99, Physics) | Fines, filtration and clogging |
| Robert Rolphes (98) | Utilization of mineral fines |
| Ligia Correas (98) | Fines generation in mining |
| Ariel Rubin (97) | Electromagnetic emissions from soils |
| Julian Prada (97) | Tomographic imaging anomalies in cohesive media |
| Shawn Green (96-97) | Jointed rock: seismic wave velocity and attenuation |
| Julio Valdes (96-97) | Stress fields around tunnels (tomography) |

*At University of Waterloo - Waterloo, Canada*

| | |
|---|---|
| A. Mullick (95) | Development of acoustic tomographer |
| M. Glenn (95) | Development of acoustic tomographer |
| J. Waddell (95) | Development of acoustic tomographer |
| S. Elias (95) | NDT concrete: signal processing in Mathcad |
| M. Klampstra (94-95) | Bison interface |
| A. Baieley (94) | Wave propagation in anisotropic materials |
| K. Salvaduray (94) | Fourier-interface for bison seismograph |
| M. Hales (94) | Permittivity in low-frequency range (air gap method) |
| K. Yajima (94) | Permittivity in low-frequency range (air gap method) |
| R. Pagulayan (94) | Molecular dynamics and the double layer |
| J. Collins (93) | Molecular dynamics - Double layers |
| C. Flaman (93) | Molecular dynamics - Double layers |
| R. Kurcz (93) | Molecular dynamics - Double layers |
| N. Nadarajah (93) | HP-4192: setting, calibration and parametric study |
| C. Day (93) | Low frequency dielectric probe |
| J. Wells (93) | Permittivity: kaolinite with inorganic contaminants |
| A. Mains (93) | Permittivity: kaolinite with inorganic contaminants |
| K. Dixon (93) | Permittivity: kaolinite with inorganic contaminants |
| C. Carriere (93) | Measurement of dielectric constant |
| K. Shanmuganathan (93) | Case study: fuzzy tomography |
| C. Weech (93) | Imaging stresses - Digital ray tracing algorithm |
| A. Reed (93) | Forward modeling and imaging |
| R. Bleszynski (92-93) | Dielectric measurements and corrosion |
| T. Huynh (92-93) | Wave propagation in discrete structures |
| G. Krueger (92-93) | Dielectric constant of soils with electrolytes |
| B. Potts (92-93) | Stress tomography – Diffraction and tomography |

*At Polytechnic University – Brooklyn, NY*

| | |
|---|---|
| B. Towsend (90) | The role of forgetting in developing expertise |
| X. D. Dong (90) | Fuzzy logic based tomographic software |
| K. R. Fang (89) | Using microwaves to build on the moon |
| C. Chang (89) | Using microwaves to alter the adsorbed layer |

| | |
|---|---|
| M. Hagi (90) | Activation energy of adsorbed layers: drying test |
| E. Tomassetti (88) | Safety of temporary excavations |

## B. TEACHING ACTIVITIES

*At KAUST (3/2015 – present)*

Fractured Rocks in Energy GeoEngineering
Sediment Processes and Properties
Experimental Methods in Research

*At Georgia Institute of Technology (1/96 – 22/2015)*

Geotechnical Aspects in Resource Recovery
Explorations into Geo-Sustainability (with R. Fragaszy)
Introduction to Discrete Signal and Inverse Problems
Study of Particulate Materials with Mechanical and Electromagnetic Waves
Experimental Methods in Engineering Research
Fundamentals of Soil Behavior
Geo-Mathematics
Engineering and Ingenuity
Civil Engineering Materials – *Undergraduate*
Soil Mechanics – *Undergraduate*

*At University of Waterloo (1/92 - 12/95)*

Physico-Chemical Soil Behavior
Wave-Based Characterization of Materials
Advanced Geotechnical Design
Foundation Engineering
Soil Mechanics – Undergraduate

*At Polytechnic University (8/97 – 12/91)*

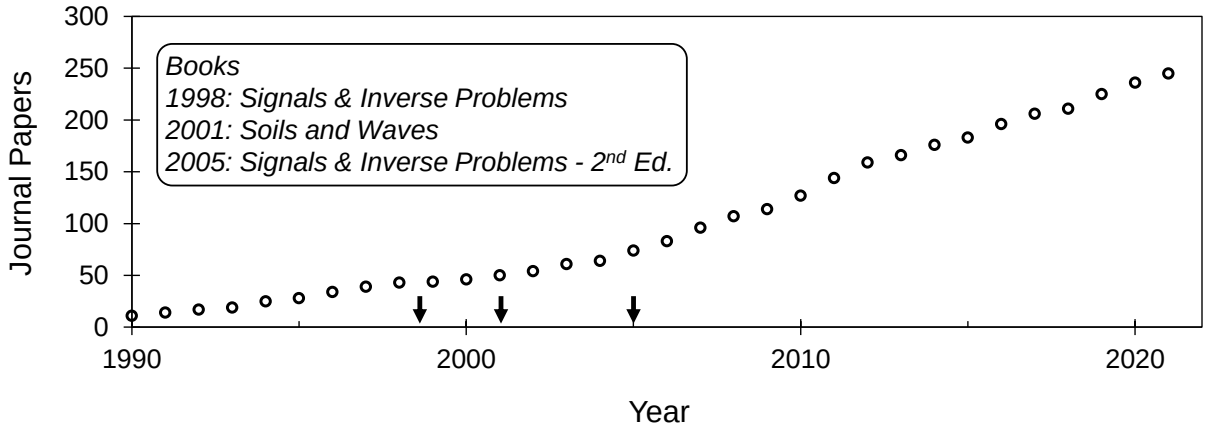
Physical-Chemical Soil Behavior
Soil Dynamics and Earthquake Engineering
Rock Mechanics and Underground Construction
Experimental methods in Research
Foundation Engineering - *Undergraduate and graduate*
Soil Mechanics – *Undergraduate*

*Short Courses*

- Characterization of Soils in the Laboratory (Basic identification of soils, Characterization with electromagnetic waves, Characterization with elastic waves): Caracterización de Suelos en Laboratorio (Identificación básica de suelos, Caracterización con ondas electromagnéticas, Caracterización con ondas elásticas). Bogotá, Colombia, October 2014.
- Material Characterization, New design methods, and Inverted Pavements, with Dr. A. Jugo, Isla Margarita, Venezuela, November 2010.

- Enhanced Oil Production: Electromagnetic waves, PDVSA, Caracas, Venezuela. April, 2006.
- Physical-Chemical Behavior of Clays, Petroleos de Venezuela, Maracaibo, Venezuela, January 2006.
- Signals and Inversion in Geotechnical Site Characterization, SAGEEP, Arlinton., USA, February 2000.
- Near-Surface Geophysics, Caracas, Venezuela, April, 2000.
- Geophysical Methods in Civil Engineering, GeoInstitute Conference, Urbana USA. July 1999.
- Non-Destructive Methods in Civil Engineering, CAMSIF, Argentina, October 1998.
- Geophysical Methods in Civil Engineering, GeoInstitute Conference, Seattle, USAAugust 1998.
- Signal Processing and Inverse Problem Solving, EEGS-SAGEEP, Reno, Nevada, USA. March 1997.
- Wave-based Testing in Civil Engineering, Graduate Course, UNC, Argentina. December 1993.
- Expert Systems in Civil Engineering, Centro Universitario, Buenos Aires, Argentina. July 1989.
- Foundation Engineering, NY-DOT, Albany, NY, USA February 1989.
- Soil Mechanics, NY-DOT, Albany, NY, USA. November 1988.
- Settlement of Shallow Foundations, U. Nacional Cordoba, Argentina. July 1984.

## VI. PUBLICATIONS




### A. PUBLISHED BOOKS AND CHAPTERS

#### Books

Santamarina, J.C. and Han, G. (2025). Soil Processes and Properties. Publisher under selection. In preparation.

Santamarina, J.C. and Muñoz Ibáñez, A. (2025). Brief Essays on Experimental Research. Publisher under selection. In preparation.

Santamarina, J.C. and Fratta, D. (2005). Discrete Signals and Inverse Problems – An Introduction for Engineers and Scientists, J. Wiley and Sons, Chichester, UK, 350 pages (Updated new edition of the earlier book with Fratta).

Santamarina, J.C., in collaboration with Klein, K. and Fam, M. (2001). Soils and Waves, J. Wiley and Sons, Chichester, UK, 488 pages.

Santamarina, J.C. and Fratta, D. (1998). Introduction to Discrete Signals and Inverse Problems in Civil Engineering, ASCE Press, Reston, VA., 327 pages.

#### Chapters in Books

Santamarina (2021). Centrifuge Modelling to Explore Energy Geotechnology Problems, in Frontiers for Hypergravity Experiments and Model Tests, CGM, U. California Davis.

Short, S., Molini, A., Santamarina, J.C., Friedrich, L. Shuckburgh, E. (2021). COP26 Visions For A Net Zero Future –Regional Profile for the Arabian Peninsula Based on Kingdom of Saudi Arabia (KSA) and United Arab Emirates (UAE). DOI: 10.33774/coe-2021-29q7b-v2

Santamarina, J.C., Park, J., Terzariol M., Cardona A., Castro GM., Cha W. Chong S., Garcia A., Hakiki F., Lyu C., Salva M., Shen Y., Sun Z. (2019). "Soil Properties: Physics Inspired … Data Driven", pp 67-91, in Geotechnical Fundamentals for Addressing New World Challenges, Ed. N. Lu and J. Mitchell, Springer.

Kim, S. Espinoza, D.N., Jung, J., Cha, M., Santamarina, J.C. (2017). Carbon Geological Storage: Coupled Processes, in Engineering and Monitoring, in Science of Carbon Storage in Deep Saline Formations: Process Coupling Across Time and Spatial Scales, Eds. Edited by P. Newell and A.G. Ilgen, Elsevier, Chapter 18, pages 287-304.

Santamarina, J.C. and Ruppel, C. (2010). The Impact of Hydrate Saturation on the Mechanical, Electrical and Thermal Properties of Hydrate-Bearing Sands, Silts and Clay, in Geophysical Characterization of Gas Hydrates, SEG Geophysical Developments Series No. 14, Editors M. Riedel, E.C. Willoughby, and S. Chopra, pp. 373-384.

Santamarina, J.C. and Shin, H.S. (2009). Friction in Granular Media, in Meso-scale Shear Physics in Earthquake and Landslide Mechanics, Editors: Y.H. Hatzor, J. Sulem, I. Vardoulakis, CRC Press, pp. 157-188.

Santamarina, J.C., Rinaldi, V., Fratta, D., Klein, K., Wang, Y.H., Cho, G.C., Cascante, G. (2005). A Survey of Elastic and Electromagnetic Properties of Near-Surface Soils, in Near-Surface Geophysics, Chapter 4, Ed. D. Buttler, SEG, pp. 71-87.

Santamarina, J.C. (1994). An Introduction to Geotomography, in Geophysical Characterization of Sites, Edited R. D. Woods, International Science Publisher, New Hampshire.

**National Academy of Engineering: NRC Reports**

Buchanan, R. et al., (2018) Future Directions for the U.S. Geological Survey's Energy Resources Program, National Research Council, The National Academies Press, Washington DC.

Daniels, D. et al., (2015). Characterization, Modeling Monitoring and Remediation of Fractured Rock, National Research Council, The National Academies Press, Washington DC.

Long, J.C. S., et al., (2005). Geological and Geotechnical Engineering in the New Millennium, National Research Council, The National Academies Press, Washington DC, pp. 206.

**Editor of Proceedings**

Burns, S.E., Mayne, P.W. and Santamarina, J.C. (2008). International Symposium on Pre-failure deformation, Atlanta, IOS Press, 944 pages.

Rix, G.J. and Santamarina, J.C. (1994). Geophysical Techniques for Site and Material Characterization, Proceedings of Workshop sponsored by the National Science Foundation.

**Invited Editor**

Revista Internacional de Desastres Naturales, Accidents e Infraestructura Civil, Special Issue on Geotechnical Engineering in the Americas, 2012.

KSCE Journal of Civil Engineering. Issue on Energy Geotechnology, vol. 15, no. 4 (13 papers).

Revista Internacional de Desastres Naturales, Accidents e Infraestructura Civil, Special Issue on Unique Latin American Soils, vol. 6, 2006.

## B. ARTICLES IN REFEREED JOURNALS (INCLUDES DISCUSSIONS)

*Under review*

Han, G. and Santamarina, JC. Laboratory Devices and Methods for the Study of Processes in Rock Fractures: Fracture Generation, Characterization and Process Monitoring, ASTM Geotechnical Testing Journal.

Muñoz-Ibañez, A. and Santamarina, JC., Fracture topology in mafic formations: Implications for geological carbon storage. International Journal of Greenhouse Gas Control.

Rached, R., Albahrani, H., Moellendick, T., Finkbeiner, T., and Santamarina, JC., Borehole Integrity Evaluation Utilizing Coupled Hydraulic Thermal and Mechanical Analyses in Robust and Pre-Optimized Finite Element Simulator, Rock Mechanics and Rock Engineering.

Im, J. and Santamarina, JC. Gravity-driven ion migration in aqueous solutions, Science Advances. (under review)

Guerrero, C., and Santamarina JC., Arroyo, M. and Romero, E., Multiphysics Assessment of Mexico City Soils – Structure and Thixotropy, ASCE Journal of Geotechnical and Geoenvironmental Engineering.

Liu, M. and Santamarina JC., Near-surface Clay Sediments: Self-assembly and Response to Ionic Concentration Gradient, Geotechnique.

Xia, Z., Liu, Q., and Santamarina JC., Controlling Salt Deposition Patterns: Engineered Substrates and Thermal Gradients, Applied Thermal Energy.

Davalos-Monteiro, J., Qi L., and Santamarina JC., Droplets at Liquid-Fluid Interfaces: Stages Leading to Coalescence, International Journal of Multiphase Flow.

Castro GM., Park, J., Cha, W., Sherik A., Santamarina JC., Buried Metal Corrosion: Mineralogy, Fines Content and Degree of Saturation. ASCE Journal of Geotechnical and Geoenvironmental Engineering.

Garcia, AV, Rached, RM, Rodriguez-Hernandez, C.D., and J.C. Santamarina. Hydraulic Fracture Propagation in Pre-structured Media: Stress Field and Fracture Network Topology. Rock Mechanics and Rock Engineering.

Smith, J., Modenesi, C. and Santamarina, J.C, Fluid Expulsion in the Red Sea: Subsurface Processes and Associated Seafloor Features, Marine and Petroleum Geology.

Shen, Y. and Santamarina J.C., Clay Response to Ionic Concentration Cycles at Zero Lateral Strain, ASCE.

Jang J.B. and Santamarina J.C. Hydrate-bearing Sediments and Frozen Ground: Vertical Strain Caused by Hydrate Dissociation or Ice Thawing, Geochemistry, Geophysics Geosystems - AGU Journal.

Rebata-Landa, V. and Santamarina, J.C., Biological Clogging of Soils Under Radial Flow Conditions

*Published*

Rodriguez-Hernandez, C.D., Park, J., Echezuria, H., and Santamarina, J.C. (2025), Closure, Volume Contraction and Permeability Reduction During Particle Crushing, ASCE Journal of Geotechnical and Geoenvironmental Engineering.

Castro, GM, Park, J. and Santamarina, JC. Closure - Revised Soil Classification System RSCS: Implementation and Engineering Implications, ASCE Journal of Geotechnical and Geoenvironmental Engineering.

Guerrero, C., and Santamarina JC. (2024), Assessment of Hydrogen Adsorption in High Specific Surface Geomaterials Using Low-Field NMR - Implications for Storage and Field Characterization, International Journal of Hydrogen Energy, vol. 95, pp. 417-426. https://doi.org/10.1016/j.ijhydene.2024.11.228

Castro GM., Park, J., Sherik A., Santamarina JC. (2024), Metal corrosion in partially saturated sands: Pore fluid conductivity and water saturation. Canadian Geotechnical Journal. https://doi.org/10.1139/cgj-2024-0097

Xia, Z., Liu, Q., and Santamarina JC. (2024). Spatiotemporal Progression of CO2 Mineralization: A Micro-CT Study of Fracture-Matrix Interaction, J. Fuels, vol. 376. https://doi.org/10.1016/j.fuel.2024.132723

Im, J. and Santamarina, JC. (2024). Understanding the Limits of Binary Diffusion for Enhanced Clay

Barrier Design. *PNAS Nexus*, Volume 3, Issue 9, pgae366, https://doi.org/10.1093/pnasnexus/pgae366

Rodriguez-Hernandez, C.D., Park, J., Echezuria, H., and Santamarina, J.C. (2024), Volume Contraction and Permeability Reduction During Particle Crushing, ASCE Journal of Geotechnical and Geoenvironmental Engineering. Volume 150, Issue 6 https://doi.org/10.1061/JGGEFK.GTENG-12234

Hafez, A.A. and Santamarina, J.C. (2024). Particle transport during asymmetric net-zero cyclic fluid flow: Flow in tubes and radial flow in fractures, Powder Technology, vol. 434. https://doi.org/10.1016/j.powtec.2023.119306.

Cardona, A. and Santamarina, J.C. (2023). Immiscible imbibition in fractured media: A dual-porosity microfluidics study, International Journal of Rock Mechanics and Mining Sciences, vol. 170. https://doi.org/10.1016/j.ijrmms.2023.105555

Park JH and Santamarina JC. (2023), Sands Subjected to Repetitive Loading Cycles and Associated Granular Degradation, Journal of Geotechnical and Geoenvironmental Engineering, ASCE. Vol. 149, no. 11. https://doi.org/10.1061/JGGEFK.GTENG-11153.

Guerrero, C., Salva, M., Modenesi, M.C., Smith, J., Terzariol, M. and Santamarina, J.C. (2023), Young Red Sea Sediments: Formation Processes, Engineering Properties and Implications, Arabian Journal for Science and Engineering. Vol. 16, no.10. DOI:10.1007/s12517-023-11652-2

Hafez, A.A., Liu, Q. and Santamarina, J.C. (2023), Magnetorheological fluids: tele-manipulation of ferromagnetic particles with external magnetic field for flow control. Geoenergy Science and Engineering. Vol. 228. https://doi.org/10.1016/j.geoen.2023.212029

Benitez, M.D., Liu, Q., and Santamarina, J.C. (2023), Organo-bentonite Coated Interfaces: Interfacial Properties and Cyclic Response, Energy and Fuels. Energy Fuels 37, pp. 9394–9401 https://doi.org/10.1021/acs.energyfuels.3c01252

Cardona, A. and Santamarina, J.C. (2023), A Convenient Device to Measure the Permeability of Intact Rock (Heterogeneity and Anisotropy), ASTM Geotechnical Testing Journal. Vol. 46, no. 5, pp. 699–711. https://doi.org/10.1520/GTJ20220112

Castro, GM, Park, J. and Santamarina, JC. (2023). Revised Soil Classification System RSCS: Implementation and Engineering Implications, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 149, No. 11. https://doi.org/10.1061/JGGEFK.GTENG-10447

Noh DH, Park JH, Santamarina JC and Kwon TH. (2023), Multimode Free-Vibration Decay Column: Small-strain stiffness and Attenuation, ASCE Journal of Geotechnical and Geoenvironmental Engineering. Volume 149, Issue 6. https://doi.org/10.1061/JGGEFK.GTENG-10748

Cha, M and Santamarina, J.C. (2022), Effect of Grain Dissolution on Sloping Ground, Scientific Reports. https://doi.org/10.1038/s41598-022-26620-1

Han WJ, Cha, W., Lee, JS, Santamarina, JC. (2022). Chemically-Induced Foam Cement: Topology, Expansion and Pressurization, Scientific Reports, https://doi.org/10.1038/s41598-022-21128-0.

Salva Ramirez, M., Park, J. Terzariol, M., Jiang, J., and Santamarina, JC. (2022). Shallow Seafloor Sediments: Density and Shear Wave Velocity, ASCE Journal of Geotechnical and Geoenvironmental Engineering. DOI:10.1061/JGGEFK/GTENG-10759

Cha, W., Park, J., and Santamarina, J.C. (2022). Long-Term Response of Sand Subjected to Repetitive Simple Shear Loading: Shakedown, Ratcheting and Terminal Void Ratio, Journal of Geotechnical and Geoenvironmental Engineering, ASCE. DOI:10.1061/JGGEFK/GTENG-10814

Liu, Q., Benitez, M.D., Xia, Z. and Santamarina, J.C. (2022). Pore-scale Phenomena in Carbon Geological Storage (Saline Aquifers - Mineralization - Depleted Oil Reservoirs), Frontiers in Earth Science. https://doi.org/10.3389/fenrg.2022.979573.

Rached, RM, Garcia, AV, and Santamarina, J.C. (2022), Long-Wavelength Propagation in Fractured

Rock Masses (3D Stress Field). Journal of Geophysical Research - Solid Earth. https://doi.org/10.1029/2022JB024907

Ng, K. and Santamarina, J.C. (2022). Mechanical and Hydraulic Properties of Carbonate Rocks - The Critical Role of Porosity, Journal of Rock Mechanics and Geotechnical Engineering. https://doi.org/10.1016/j.jrmge.2022.07.017.

Smith JE. Santamarina JC. (2022). Red Sea Evaporites: Formation, Creep and Dissolution, Earth-Science Reviews. https://doi.org/10.1016/j.earscirev.2022.104115

Modenesi, M.C. and Santamarina, J.C. (2022), Hydrothermal metalliferous sediments in the Red Sea: Geomechanical characterization, Eng. Geology. DOI: https://doi.org/10.1016/j.enggeo.2022.106720

Liu Q and Santamarina JC (2022). Fluid-Driven Instabilities in Granular Media: From Viscous Fingering and Dissolution Wormholes to Desiccation Cracks and Ice Lenses, Frontiers in Mechanical Engineering - Solid and Structural Mechanics. DOI:10.3389/fmech.2022.861554

Zhou B., Sanchez M., Oldecop L., Santamarina JC (2022), A Geomechanical Model for Gas Hydrate Bearing Sediments Incorporating High Dilatancy, Temperature, and Strain-Rate Effects. Energies 15(12). DOI: https://doi.org/10.3390/en15124280.

Hafez, A., Liu, Q., Finkbeiner, T., Moellendick, E., Santamarina, J.C. (2022). Rapid Bentonite - Cement hydration: Implications for fluid loss control. Journal of Petroleum Science and Engineering. 215A. https://doi.org/10.1016/j.petrol.2022.110615

Cha, M.S. and Santamarina, J.C. (2022), Volume Contraction in Shallow Sediments - Discrete Element Simulation, Applied Sciences, https://doi.org/10.3390/app12168015

Abu-Mahfouz IS, Wicaksono AN., Idiz E., Cartwright J., Santamarina JC., and Vahrenkamp VC. (2022) Modelling the initiation of bitumen-filled microfractures in immature, organic-rich carbonate mudrocks: The Maastrichtian source rocks of Jordan. Marine and Petroleum Geology. https://doi.org/10.1016/j.marpetgeo.2022.105700

Zhao B. and Santamarina, J.C. (2022), Fine-Grained Sediment Characterization and Process Monitoring Using Nuclear Magnetic Resonance (NMR), Geotechnical Testing Journal 45, no. 4 https://doi.org/10.1520/GTJ20210144.

Salva Ramirez, M., Santamarina, J.C. (2021), Specific Surface by Colorimetry and Image Analysis, ASTM Geotechnical Testing Journal, vol. 45. https://doi.org/10.1520/gtj20210026

Cardona, A., Finkbeiner, T., Santamarina, J.C. (2021), Natural Rock Fractures: From Aperture to Fluid Flow, J. Rock Mechanics and Rock Engineering, 54:5827–5844. DOI: https://doi.org/10.1007/s00603-021-02565-1

Hafez, A., Liu, Q., Santamarina, J.C. (2021), Self-assembly of Millimeter-scale Magnetic Particles in Suspension, Soft Matter, 17: 6935-6941. DOI: DOI https://doi.org/10.1039/D1SM00588J

Shin, H. and Santamarina J.C., Numerical Study Of Fractured Rock Masses: Transverse Isotropy vs. Implicit Joint-Continuum Models, Computer and Geotechnics. 138:7pages DOI: https://doi.org/10.1016/j.compgeo.2021.104317

Garcia, A.V. and Santamarina J.C. (2021), Heat Flow in Fractured Rocks: Stress and Moisture-Dependent Thermal Contact Resistance, Geothermics. doi.org/10.1016/j.geothermics.2021.102113

Noh, DH, Cha, W., Santamarina, J.C., Cho, GC, and Kwon, TH. (2021), The Effect of Soft Viscoelastic Biopolymer on the Undrained Shear Behavior of Loose Sands, ASCE Journal of Geotechnical and Geoenvironmental Engineering, vol. 147(8). DOI: 10.1061/(ASCE)GT.1943-5606.0002582.

Hafez, A., Liu, Q. Finkbeiner, T., Alouhali, R.A., Moellendick, T.E., Santamarina, J.C. (2021), The Effect of Particle Shape on Discharge and Clogging, Nature Scientific Reports. DOI: 10.1038/s41598-021-82744-w.

Abelskamp, G. and Santamarina, J.C. (2021), Academia During the COVID-19 Pandemic: A Study within the Geotechnical Engineering Field, International Journal for Innovation Education and

Research. 9(1), 574–587. https://doi.org/10.31686/ijier.vol9.iss1.2906.

Martinez, A., DeJong, J., Akin, I., Aleali, A., Arson, C., Atkinson, J., Bandini, P., Baser, T., Borela, R., Boulanger, R., Burrall, M., Chen, Y., Collins, C., Cortes, D., Dai, S., DeJong, T., Del Dottore, E., Dorgan, K., Fragaszy, R., Frost, D., Full, R., Ghayoomi, M., Goldman, D., Gravish, N., Guzman, I.L., Hambleton, J., Hawkes, E., Helms, M., Hu, D.L., Huang, L., Huang, S., Hunt, C., Irschick, D., Lin, H., Lingwall, B., Marr, W.A., Mazzolai, B., McInroe, B., Murthy, T., O'Hara, K., Porter, M., Sadek, S., Sanchez, M., Santamarina, C., Shao, L., Sharp, J., Stuart, H., Stutz, H.H., Summers, A.P., Tao, J., Tolley, M., Treers, L., Turnbull, K., Valdes, R., van Paassen, L., Viggiani, G., Wilson, D., Wu, W., Yu, X. and Zheng, J. (2021). "Bio-inspired geotechnical engineering: principles, current work, opportunities and challenges". Geotechnique. http://doi.org/10.1680/jgeot.20.P.170.

Liu, Q., Sun, Z., and Santamarina, J.C. (2021). Self-assembled Nanoparticle-Coated Interfaces: Capillary Pressure, Shell Formation and Buckling, Journal of Colloid and Interface Science, vol. 581, pp. 251-261. DOI: 10.1016/j.jcis.2020.07.110

Terzariol, M. and Santamarina, J.C. (2020). Multi-well Strategy for Gas Production by Depressurization from Methane Hydrate-Bearing Sediments, Energy J. DOI.org/10.1016/j.energy.2020.119710.

Kim SY, Park, JH, Cha, WJ, Lee, JS and Santamarina, J.C. (2020). Soil Response during Drained and Undrained Freeze-Thaw Cycles under Deviatoric Loading. Journal of Geotechnical and Geoenvironmental Engineering, vol. 147, DOI:10.1061/(ASCE)GT.1943-5606.0002464

Park, J. and Santamarina, J.C. (2020). The Critical Role of Pore Size on Depth-Dependent Microbial Cell Counts in Sediments, Nature Scientific Reports. DOI: https://doi.org/10.1038/s41598-020-78714-3

Nauruzbayeva, J., Sun, Z, Gallo A., Ibrahim, M., Santamarina, J.C., Mishra, H. (2020). Electrification at Water-Hydrophobe Interfaces, Nature Communications. Vol. 11, pp. 1-10. DOI: 10.1038/s41467-020-19054-8.

Lyu, C. Park, JH, and Santamarina, J.C. (2020). Depth-Dependent Geoacoustic Properties: Seabed Characterization, ASCE Journal of Geotechnical and Geoenvironmental Engineering vol. 147, DOI:10.1061/(ASCE)GT.1943-5606.0002426.

Roshankhah, S., Garcia, AV, and Santamarina, J.C. (2020). Thermal Conductivity of Sand-Silt Mixtures, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, vol. 147, DOI:10.1061/(ASCE)GT.1943-5606.0002425.

Terzariol, M., Park, J., and Santamarina, J.C. (2020). Closure to the discussion on "Characterization and Engineering Properties of Dry and Ponded Class-F Fly Ash", Journal of Geotechnical and Geoenvironmental Engineering, ASCE, vol. 146(9).

Teymouri, M., Sanchez, M. and Santamarina, J.C. (2020). A Pseudo-Kinetic Model to Simulate Phase Changes in Hydrate Bearing Sediments, Marine and Petroleum Geology, vol. 120, https://doi.org/10.1016/j.marpetgeo.2020.104519

Zhao, B. and Santamarina, J.C. (2020). Desiccation Crack Formation Beneath the Surface, Geotechnique, Volume 70 Issue 2, pp. 181-186

Terzariol, M. Park, JH, Castro GM and Santamarina, J.C. (2020). Methane Hydrate-Bearing Sediments: Pore Habit and Implications, Marine and Petroleum Geology, vol. 116, DOI: 10.1016/j.marpetgeo.2020.104302.

Park, J.H., and Santamarina, J.C. (2020). Soil Response to Repetitive Changes in Pore Water Pressure under Deviatoric Loading, ASCE Journal of Geotechnical and Geoenvironmental Engineering, 146(5), DOI:10.1061/(ASCE)GT.1943-5606.0002229.

Cardona-Ramirez, A. and Santamarina, J.C. (2020). Matrix Permeability in Carbonate Rocks: Characterization and Prediction. AAPG Bulletin, 104 (1): 131–144.

Cha, M and Santamarina, J.C. (2019). Pressure-dependent grain dissolution using discrete element simulations, Granular Matter. vol. 21, doi.org/10.1007/s10035-019-0960-0

Liu Q., Zhao, B. and J.C. Santamarina J.C. (2019). Particle Migration and Clogging in Porous Media: A Convergent-Flow Microfluidics Study, Journal of Geophysical Research - Solid Earth. vol. 124, pp. 9495-9504.

Cha, M and Santamarina, J.C. (2019). Localized Dissolution in Sediments Under Stress, Granular Matter, vol. 21, doi.org/10.1007/s10035-019-0932-4

Torres-Cruz L.A. and Santamarina J.C. (2019). The Critical State Line of Non-Plastic Tailings, Canadian Geotechnical Journal, vol. 57, doi.org/10.1139/cgj-2019-0019

Sun, Z. and Santamarina J.C. (2019). Haines Jumps: Pore Scale Mechanisms, Physical Review E., vol. 100, DOI:10.1103/PhysRevE.100.023115 (Editors' Choice). DOI: 10.1103/PhysRevE.100.023115

Lei, L. and Santamarina J.C. (2019). Physical Properties of Fine-grained Sediments with Segregated Hydrate Lenses. Marine and Petroleum Geology 109, pp. 899-911.

Shin, H., and Santamarina, J.C. (2019). "An implicit joint-continuum model for the hydro-mechanical analysis of fractured rock masses", International Journal of Rock Mechanics and Mining Sciences, vol. 119, pp. 140-148.

Roshankhah, S., Cruz, L. G., Shin, H., Lizcano, A., Santamarina, J. C. (2019). Kinematic Dilation During the Hydraulic Stimulation of Pre-fractured Rocks, Geotechnique Letters, Volume 9-3, pp. 1-7.

Liu Q., Sun Z. and Santamarina J.C. (2019). Transport and Adsorption of Silica Nanoparticles in Carbonate Reservoirs: A Sand Column Study, Energy&Fuels. Vol. 33-5, pp. 4009-4016.

Santamarina J.C., Torres-Cruz L.A. and Bachus R. (2019). Why coal ash and tailings dam disasters occur: Knowledge gaps and management shortcomings contribute to catastrophic dam failures, Science, vol. 364, issue 6440, pp. 526-528. DOI: 10.1126/science.aax1927.

Sun, Z. and Santamarina J.C. (2019). Grain-Displacive Gas Migration in Fine-grained Sediments, J. Geophysical Research: Solid Earth, vol. 124, pp. 2274-2285. DOI: 10.1029/2018JB016394

Papadopoulos, E. and Santamarina J.C. (2019). Inverted Base Pavements: Construction and Performance, Int. Journal of Pavement Engineering, vol. 20-6, pp. 697-703.

Park, J.H., and Santamarina, J.C. (2019). Sand response to a large number of loading cycles under zero-lateral strain conditions: Evolution of void ratio and small strain stiffness, Geotechnique, vol. 69-6, pp. 501-513. DOI: 10.1680/jgeot.17.P.124

Bachus, R.C., Terzariol, M., Pasten, C., Chong, S,H., Dai, S., Cha, M.S., Kim, S.H., Jang, J., Papadopoulos, E., Roshankhah, S., Lei, L., Garcia, A., Park, J., Sivaram, A., Santamarina, F., Ren, X. and Santamarina, J.C. (2019). Characterization and Engineering Properties of Dry and Ponded Class-F Fly Ash, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, vol. 145(3). DOI:10.1061/(ASCE)GT.1943-5606.0001986.

Sun, Z., Jang J., and Santamarina, J.C. (2018). Time Dependent Pore Filling, Water Resources Research, vol. 54(12). 10242-10253.

Sanchez, M. and Santamarina, J.C., Teymouri M., Gai X. (2018). Coupled numerical modeling of gas hydrate bearing sediments from laboratory to field-scale analyses, Journal of Geophysical Research - Solid Earth, vol. 123-12, pp. 10326-10348.

Lei, L. and Santamarina J.C. (2018). Laboratory Strategies for Hydrate Formation in Fine-Grained Sediments, Journal of Geophysical Research - Solid Earth, vol. 123-4, pp. 2583-2596.

Garcia, A. Rached, R. and Santamarina, J.C. (2018). Large-scale True Triaxial Apparatus for Geophysical Studies in Fractured Rock, ASTM Geotechnical Testing Journal, vol. 41, pp. 821-829.

Park, J.H., G. Castro, and Santamarina, J.C. (2018). Closure, Revised Soil Classification System for Coarse-Fine Mixtures, ASCE J. Geotech Geoenviromental Engineering, vol. 144(8).

Ren, X. W., Santamarina, J.C. (2017). The hydraulic conductivity of sediments: A pore size perspective. Eng. Geol. 233, 48-54.

Kim, H.K. and Santamarina J.C. (2017). Spatial Variability in Stiffness – Effects on ko Load Response, KSCE Journal of Civil Engineering, vol. 22(4). pp. 1101-1108.

Liu, Q. and Santamarina, J.C. (2017). Mudcake Growth: Model and Implications, J. Petrol. Science and Engineering v. 162, pp. 251-259.

Terzariol, M., Goldsztein, G. and Santamarina J.C. (2017). Maximum Recoverable Gas from Hydrate Bearing Sediments by Depressurization, Energy, 141, pp. 1622-1628.

Espinoza, D.N. and Santamarina J.C. (2017). CO2 Breakthrough – Caprock Sealing Efficiency and Integrity for Carbon Geological Storage, International Journal of Greenhouse Gas Control, vol. 66, pp. 218-229.

Park, J.H. and Santamarina, J.C. (2017). Revised Soil Classification System for Coarse-Fine Mixtures, ASCE J. Geotech Geoenviromental Engineering, vol. 143(8). DOI:10.1061/(ASCE)GT.1943-5606.0001705.

Cordero, J.A., Useche, G., Prat, P.C., Ledesma, A., and Santamarina, J.C. (2017). Soil Desiccation Cracks as a Suction-Contraction Process, Geotechnique Letters, vol. 7(4). pp. 279-285.

Dai, S. and Santamarina, J.C. (2017). Stiffness evolution in frozen sands subjected to stress changes, Journal of Geotechnical and Geoenvironmental Engineering, vol. 143(9). DOI:10.1061/(ASCE)GT.1943-5606.0001713.

Jang J. and Santamarina, J.C. (2017). Closure: Fine-Grained Soil Classification, Journal of Geotechnical and Geoenvironmental Engineering, ASCE vol. 143(7).

Sánchez, M., Xuerui Gai, X. Santamarina, J.C. (2017). A Constitutive Mechanical Model for Gas Hydrate Bearing Sediments Incorporating Inelastic Mechanisms, Computers and Geotechnics, vol., 84, pp. 28–46.

Jang J., Sun, Z., and Santamarina, J.C. (2016). Capillary pressure across a pore throat in the presence of surfactants, Water Resources Research, vol. 52, pp. 9586–9599.

Santamarina, J.C. and Park, J.H. (2016). Geophysical Properties of Soils, Australian Geomechanics Journal, vol. 51(4). pp. 183-194.

Cha, M and Santamarina, J.C. (2016). Hydro-chemo-mechanical Coupling in Sediments: Localized Mineral Dissolution, Geomechanics for Energy and the Environment 7, 1-9.

Chong, SH and Santamarina, J.C. (2016). Sands Subjected to Vertical Repetitive Loading under Zero Lateral Strain: Accumulation Models, Terminal densities, and Settlement, Canadian Geotech. J., vol. 53(12). pp. 2039-2046.

Cha, M and Santamarina, J.C. (2016). Effect of dissolution on the load-settlement behavior of shallow foundations, Canadian Geotechnical Journal, vol. 53(8). pp. 1353-1357.

Shin, H. and Santamarina J.C. (2016). Sediment-Well Interaction During Gas Production From Hydrate Bearing Sediments: Hydro-Mechanical Coupling And Implications, Acta Geotechnica, vol. 12, pp. 883–895.

Jang J. and Santamarina, J.C. (2016). Hydrate Bearing Clayey Sediments: Formation and Gas Production Concepts, Marine and Petroleum Geology, vol. 77, pp. 235-246.

Santamarina, J.C. (2016). [What] to Teach or Not to Teach – That is the question, Journal Geotechnical Research, vol. 2(4). pp. 135-138.

Chong, S.H. and Santamarina J.C. (2016). Soil Compressibility Models for Wide Stress Range, Journal of Geotechnical and Geoenvironmental Engineering, ASCE vol. 142(6). DOI:10.1061/(ASCE)GT.1943-5606.0001482.

Jang J. and Santamarina, J.C. (2016). Fines Classification Based on Sensitivity to Pore-Fluid Chemistry, Journal of Geotechnical and Geoenvironmental Engineering, ASCE vol. 142(4). DOI:10.1061/(ASCE)GT.1943-5606.0001420.

Dai, S., Shin, H., Santamarina, J.C. (2016). The Formation and Development of Salt Crust on Sediment Surfaces, Acta Geotechnica, vol. 11(5). pp. 1103-1109.

Papadopoulos, E., Cortes,D., and Santamarina J.C. (2016). In Situ Assessment Of The Stress-Dependent Stiffness Of Unbound Aggregate Bases: Application In Inverted Base Pavements", International Journal of Pavement Engineering, vol. 17 (10). 870-877.

Papadopoulos, E. and Santamarina J.C. (2016). Analysis Of Inverted Base Pavements With Thin Asphalt Layers, International Journal of Pavement Engineering, vol. 17(7). pp. 590-601.

Kim, S. H. and Santamarina, J. C. (2015). Geometry-coupled reactive fluid transport at the fracture scale: application to CO2 geologic storage, Geofluids, vol. 16, pp. 329-341.

Kim, S. H. and Santamarina, J. C. (2015). Reactive Fluid Flow in CO2 Storage Reservoirs – A 2D Pore Network Model Study, Greenhouse Gases: Science and Technology, 5(4) pp. 462-473

Pasten C., Garcia M. and Santamarina J.C. (2015). Physical and Numerical Modelling of the Thermally Induced Wedging Mechanism, Geotechnique Letters vol. 5, pp. 86-89.

Viggiani, G., Andò, E., Takano, D, and Santamarina, J.C. (2015). X-ray Tomography: A Valuable Experimental Tool for Revealing Processes in Soils, Geotechnical Testing, vol. 38(1). pp. 61-71.

Cartwright, J. and Santamarina, J.C. (2015). Seismic Characteristics of Fluid Escape Pipes in Sedimentary Basins: Implications for Pipe Genesis, Marine and Petroleum Geology, vol. 65, pp. 126-140.

Cha, M and Santamarina, J.C. (2015). Dissolution of Randomly Distributed Soluble Grains: Post Dissolution $k_o$-Loading and Shear, Geotechnique, vol. 64, pp. 828-836.

Santamarina, J.C., Dai, S., Terzariol, M., Jang, J., Waite, W.F., Winters, W.J., Nagao, J., Yoneda, J., Konno, Y., Fujii, T., Suzuki, K. (2015). Hydro-Bio-Geomechanical Properties of Hydrate Bearing Sediments from Nankai Trough, Journal of Marine and Petroleum Geology, vol. 66, pp. 434-450.

Dai, S., Lee, J. Y., Santamarina, J.C. (2014). Hydrate Nucleation in Quiescent and Dynamic Conditions, Fluid Phase Equilibria, 378, pp. 107-112.

Roshankhah, S., Santamarina, J. C. (2014). Engineered Sediments for Heat Conduction and Load Transfer in Energy Geotechnology, Geotechnique Letters, 4, pp. 145-150.

Dai, S., Santamarina, J.C. (2014). Sampling Disturbance in Hydrate-Bearing Sedimment Pressure Cores: NGHP-01 Expedition, Krishna-Godavari Basin, J. Marine and Petroleum Geology, vol. 58, pp. 178-186.

Pasten C. and Santamarina J.C. (2014). Experimental and Numerical Modeling of Thermally-Induced Ratcheting Displacement of Geomembranes on Slopes, Geosythetics International, vol. 21-6, pp. 334-341.

Cha, M., Santamarina, J.C., Kim, H.S. and Cho G.C. (2014). Small-Strain Stiffness, Shear Wave Velocity and Soil Compressibility, Journal of Geotechnical and Geoenvironmental Engineering, ASCE , vol. 140(10). pp. 828-836.

Jang J. and Santamarina, J.C. (2014). Evolution of Gas Saturation and Relative Permeability During Gas Production from Hydrate Bearing Sediments - Gas Invasion vs. Gas Nucleation, Journal of Geophysical Research – Solid Earth, vol. 119, pp., 116–126.

Kim, S. H. and Santamarina, J. C. (2014). CO2 Geological Storage: Hydro-Chemo-Mechanical Analyses and Implications, Greenhouse Gases: Science and Technology, vol. 4, pp. 528-543.

Pasten C., Shin, H. and Santamarina J.C (2014). Long-Term Foundation Response to Repetitive Loading, ASCE Journal of Geotechnical and Geoenvironmental Engineering, vol. 140(4). DOI: 10.1061/(ASCE)GT.1943-5606.0001052.

Pasten C. and Santamarina J.C (2014). Thermally Induced Long-Term Displacement of Thermoactive Piles, ASCE Journal of Geotechnical and Geoenvironmental Engineering, vol. 140(5).

DOI:10.1061/(ASCE)GT.1943-5606.0001092

Kim, S. H. and Santamarina, J. C. (2014). Engineered CO2 injection for geological storage - The Use of Surfactants, International Journal of Greenhouse Gas Control vol. 20, pp. 324-332.

Cha, M.S. and Santamarina, J.C. (2013). Pre-dissolution and Post-dissolution Penetration Resistance, ASCE J. Geotechnical and Geoenvironmental Engineering Journal of Geotechnical and Geoenvironmental Engineering vol. 139, 2193-2200.

Dai, S. and Santamarina, J.C. (2013). Water Retention Curve for Hydrate-Bearing Sediments, Geophysical Research Letters vol. 40, 5637-5641.

Kim, S. H. and Santamarina, J. C. (2013). CO2 breakthrough and leak-sealing – Experiments on shale and cement, International Journal of Greenhouse Gas Control, vol. 19, pp. 471-477.

DeJong, J.T., Soga, K.S., Kavazanjian, E., Burns, S., van Paassen, L., Fragaszy, R., Al Qabany, A., Aydilek, A., Bang, S.S., Burbank, M., Caslake, L., Chen, C.Y., Cheng, X., Chu, J., Ciurli, S., Fauriel, S., Filet, A.E., Hamdan, N., Hata, T., Inagaki, Y., Jefferis, S., Kuo, M., Larrahondo, J., Manning, D., Martinez, B., Mortensen, B., Nelson, D., Palomino, A., Renforth, P., Santamarina, J.C., Seagren, E.A., Tanyu, B., Tsesarsky, M., Weaver, T., (2013). Biogeochemical Processes and Geotechnical Applications: Progress, Opportunities, and Challenges, Geotechnique, vol. 63, no. 4, 287-301.

Shin, H. and Santamarina, J.C. (2013). The Role of Particle Angularity on the Mechanical Behavior of Granular Mixtures, J. Geotechnical and Geoenvironmental Eng. ASCE, vol. 139, pp. 353-355.

Bakun-Mazor, D., Hatzor, Y.H., Glaser, S.D., and Santamarina J.C. (2013). Thermally vs. seismically induced block displacements in Masada rock slopes, International Journal of Rock Mechanics and Mining Science, vol. 61, pp. 196-211.

Cortes, D.D. and Santamarina, J.C. (2013). Inverted Base Pavement Case History (LaGrange, Georgia): Construction, Characterization and Preliminary Numerical Analyses, International J. Pavement Engineering, International Journal of Pavement Engineering vol. 14, 463-471

Dai, S., Wuttke, F. and Santamarina, J.C. (2012). Coda Wave Analysis to Monitor Processes in Soils, ASCE J. Geotechnical and Geoenvironmental Engineering, vol. 139, 1504-1511

Cortes, D.D., Shin, H.S. and Santamarina, J.C. (2012). Numerical Simulation of Inverted Pavement Systems, ASCE J. Transportation Engineering, vol. 138, no. 12, pp. 1507-1519.

Jung, JW., Santamarina, J.C. (2012). Hydrate Formation and Growth in Pores, Journal of Crystal Growth, vol. 345, pp. 61-68.

Jung, JW., Jang, J., Santamarina, J.C., Tsouris, C., Phelps, TJ., and Rawn, CJ. (2012). Gas Production from Hydrate-Bearing Sediments: The Role of Fine Particles, Energy & Fuels, vol. 26, pp. 480-487.

Cortes, D.D. Santamarina, J.C., Jugo A. (2012). Inverted Pavement Systems: Experimental And Numerical Analyses Of Non-Linear Unbound Aggregate Base Behavior (Pavimentos Flexibles con Rigidez Invertida: Caracterización Experimental y Modelación Numérica). Revista Internacional de Desastres Naturales, vol. 12(1). pp. 136-143.

Pasten, C., Shin, HS, Santamarina, J.C. (2012). Displacement Accumulation and Ratcheting, Comportamiento y Modelacion de Geo-Materiales Sometidos a Cargas Repetitivas." Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil, vol. 12(1). pp. 11-18.

Claria, J.J., Goldsztein, G.H., Santamarina, J.C. (2012). AC Diffusion: Transport in Porous Networks Subjected to Zero-Time-Average Advective Flow, Transport in Porous Media, vol. 93, pp. 51-61.

Dai, S., Santamarina, J.C., Waite, W. and Kneafsay, T. (2012). Hydrate Morphology: Physical Properties of Sands with Patchy Hydrate Saturation, Journal of Geophysical Research - Solid Earth, vol. 117(11).

Espinoza, D.N. and Santamarina J.C., (2012). Clay interaction with liquid and supercritical CO2: The relevance of electrical and capillary forces, International Journal of Greenhouse Gas Control, vol. 10, pp. 351-362.

Jung, JW., Santamarina, J.C., Soga, K. (2012). Stress-Strain Response of Hydrate Bearing Sands: Numerical Study Using Discrete Element Simulations, Journal of Geophysical Research: Solid Earth, vol. 117(B4).

Imhof, A.L. and Santamarina, J.C. (2012). Seismic Parameter Evaluation in Gravel and Sands Samples Subjected to Stress Using General Purpose Piezocrystals, Geofísica Internacional, vol. 51, pp. 109-119.

Al Qabany, A., Soga, K., and Santamarina, J.C. (2012). "Factors Affecting Efficiency of Microbially Induced Calcite Precipitation." Journal of Geotechnical and Geoenvironmental Engineering, 138(8). 992–1001.

Rebata-Landa, V. and Santamarina, J.C. (2012). Mechanical Effects of Biogenic Nitrogen Gas Bubbles in Soils, Journal of Geotechnical and Geoenvironmental Engineering, 138, pp. 128-137.

Santamarina, J.C., Dai, S. Jang, J. and Terzariol, M. (2012). Pressure Core Technology, Scientific Drilling, vol. 14, pp. 44-48.

Pasten, C. and Santamarina, J.C. (2012). Energy and Quality of Life, Energy Policy, vol. 49, pp 468-476.

Jung, JW., Santamarina, J.C. (2011). Hydrate Adhesive and Tensile Strength, G-Cubed Geochemistry, Geophysics and Geosystems, vol. 12(8).

Jang, J. and Santamarina J.C. (2011).Recoverable Gas from Hydrate-Bearing Sediments: Pore Network Model Simulation and Macroscale Analyses, Journal of Geophysical Research: Solid Earth, vol. 116(B8).

Phadnis, H. and Santamarina J.C. (2011). Bacteria In Sediments: Pore Size Effects, Geotechnique Letters, vol. 1, pp. 91–93.

Shin, H. and Santamarina, J.C. (2011). Open-Mode Discontinuities in Soils, Geotechnique Letters, vol. 1, pp. 95-99. (Among 10 best papers of 2011)

Shin H. and Santamarina J.C. (2011). Desiccation Cracks in Saturated Fine-Grained Soils: Particle Level Phenomena and Effective Stress Analysis, Geotechnique, vol. 61, pp. 961–972.

Espinoza, D.N. and Santamarina, J.C. (2011). P-wave monitoring of hydrate-bearing sand during CH4-CO2 replacement, Int. J. Greenhouse Gas Control, vol. 5, pp. 1031–1038.

Yun, T.S. and Santamarina, J.C. (2011). Hydrate Growth in Granular Materials: Implication to Hydrate Bearing Sediments, Geosciences Journal, vol. 15(3), pp. 225~348

Jang, J., Narsilio, G. and Santamarina, J.C. (2011), Hydraulic Conductivity in Spatially Varying Media -A Pore-Scale Investigation, Geophysical Journal International, vol. 184, pp. 1167-1179

Moridis, G.J., Collett, T.S., Pooladi-Darvish, M., Santamarina, J.C., Boswell, R., Kneafsey, T.J., Rutqvist, J., Reagan, M.T., Sloan, E.D., Sum, A., and Koh, C. (2011). Challenges, Uncertainties, and Issues Facing Gas Production From Gas-Hydrate Deposits. SPE Res Eval & Eng 14(1): 76-112. SPE-131792-PA.

Dai, S., Lee, C.H. and Santamarina, J.C. (2011). Mount Elbert Sediments (With and Without Hydrates): Characteristics, Mechanical Properties and Geophysical Parameters, Marine and Petroleum Geology, vol. 28, pp. 427-438.

Yun, T.S., Lee, C., Lee, J.S., Jang-Jun Bahk, and Santamarina, J.C. (2011). A Pressure Core Based Characterization of Hydrate Bearing Sediments in the Ulleung Basin, East Sea, Journal of Geophysical Research, vol. 117, pp. 151-158.

Fragaszy, R.J., Santamarina, J.C., Amekudzi, A., Assimaki, D., Bachus, R., Burns, S.E., Cha, M., Cho, G.C., Cortes, D.D., Dai, S., Espinoza, D.N., Garrow, L., Huang, H., Jang, J., Jung, J.W., Kim, S.H., Kurtis, K., Lee, C., Pasten, C., Phadnis, H., Rix, G., Shin, H.S., Torres, M.C., and Tsouriz, C. (2011). Sustainable development and energy geotechnology – potential roles for geotechnical engineering. KSCE Journal of Civil Engineering, Special Issue on Energy Geotechnology, vol. 15, no. 4, pp. 611-621.

Santamarina, J.C. and Cho, G.C. (2011). Energy Geotechonology, KSCE Journal of Civil Engineering, vol. 15, no. 4, pp. 607-610.

Pasten, C.R., Santamarina, J.C. (2011). Energy Geo-Storage, KSCE Journal of Civil Engineering, vol. 15, no. 4, pp. 655-667.

Espinoza, D.N., Kim, S.H., Santamarina, J.C. (2011). Carbon Geological Storage, KSCE Journal of Civil Engineering, vol. 15, no. 4, pp. 707-719.

Yun, T.S., Dumas, B. and Santamarina, J.C. (2011). Heat Transport in Granular Materials During Cyclic Fluid Flow, Granular Matter, vol. 13, pp. 29-37.

Lee, C., Yun, T.S., Lee, J.S., Bahk, J.J. and Santamarina, J.C. (2011). Geotechnical Characterization of Marine Sediments in The Ulleung Basin, East Sea, Engineering Geology, vol. 117, pp. 151-158.

Espinoza, D.N. and Santamarina J.C. (2010). Ant Tunneling - A Granular Media Perspective, Granular Matter, vol. 12, pp. 607-616.

Imhof, A.L., Calvo, C.A. and Santamarina, J.C. (2010). Seismic Data Inversion by Cross-Hole Tomography Using Uniform Information Matrices, Brazilian Journal of Geophysics, vol, 28(1). pp 79-88.

Yun T.S., Fratta D. and Santamarina J.C. (2010). Hydrate Bearing Sediments from the Krishna-Godavari Basin: Physical Characterization, Pressure Core Testing and Scaled Production Monitoring, Journal of Energy & Fuels, vol. 24, pp. 5972 -5983.

Jung, J.W., Espinoza, D.N. and Santamarina, J.C. (2010). Properties and phenomena relevant to CH2-CH4 replacement in hydrate-bearing sediments, Journal of Geophysical Research, vol. 115, B10102, DOI:10.1029/2009JB000812

Shin, H. and Santamarina, J.C. (2010). Fluid-driven fractures in uncemented sediments: Underlying particle-level processes, Earth and Planetary Science Letters, vol. 299, pp 180-189.

Brugada, J., Cheng, Y. P., Soga, K., and Santamarina, J.C. (2010). Discrete element modelling of geomechanical behavior of methane hydrate soils with pore-filling hydrate distribution, Granular Matter, vol. 12, no. 5, pp. 517-525.

Jung, J.W. and Santamarina, J.C. (2010). $CH_4$-$CO_2$ Replacement in Hydrate-Bearing Sediments: A Pore-Scale Study, G-Cubed Geochemistry, Geophysics and Geosystems, Vol. 11, Q0AA13, DOI:10.1029/2010GC003339.

Espinoza, D.N. and Santamarina J.C. (2010). Water-CO2-mineral systems: interfacial tension, contact angle and diffusion – Implications to CO2 geological storage, Water Resources Research, vol. 46, DOI: 10.1029/2009WR008634.

Lee, J.Y., Santamarina, J.C. and Ruppel, C.D. (2010). Parametric Study of the Physical Properties of Hydrate-Bearing Sand, Silt, and Clay Sediments. Part I: Electromagnetic Properties. J. Geophysical Research – Solid Earth. Vol. 115, B11104, DOI:10.1029/2009JB006669.

Lee, J.Y., Francisca F., Santamarina, J.C. and Ruppel, C.D. (2010). Parametric Study of the Physical Properties of Hydrate-Bearing Sand, Silt, and Clay Sediments. Part II: Small-Strain Mechanical Properties, J. Geophysical Research – Solid Earth. vol. 115, B11105, DOI:10.1029/2009JB006670,

Lee, J.Y. and Santamarina, J.C. (2010). Electrical Resistivity Tomography in Cylindrical Cells—Guidelines for Hardware Pre-Design, Geotechnical Testing J. vol. 33, pp. 23-32, DOI: 10.1520/GTJ102366

Shin, H., Santamarina, J.C. and Cartwright, J. (2010). Displacement Field In Contraction Driven Faults, J. Geophysical Research, 115, B07408, DOI:10.1029/2009JB006572.

Lee, J.Y., Santamarina, J.C. and Ruppel, C.D. (2010). Volume change associated with formation and dissociation of hydrate in sediment, Geochemistry, Geophysics, Geosystems, 11, Q03007, DOI:10.1029/2009GC002667

Cha, M. Cho, GC and Santamarina, J.C. (2009). Long-wavelength P- and S-wave Propagation in Jointed Rock Masses, Geophysics, vol. 74, n. 5, pp. E205-E214.

Waite W.F., Santamarina J.C., Cortes DD, Dugan B, Espinoza DN., Germaine J., Jang J., Jung J.W., Kneafsey T., Shin HS, Soga K., Winters W., and Yun T-S. (2009). Physical Properties Of Hydrate-Bearing Sediments, Review of Geophysics, vol. 47, DOI:10.1029/2008RG000279.

Cortes, D.D., Martin, A.I., Yun, T.S., Francisca, F.M., Santamarina, J.C. and Ruppel, C. (2009). Thermal Conductivity of Hydrate-Bearing Sediments, J. Geophysical Research. vol. 114, DOI:10.1029/2008JB006235.

Shin H. and Santamarina J.C. (2009). Mineral Dissolution and the Evolution of $k_0$. J. Geotechnical and Geoenvironmental Eng. ASCE, vol. 135, no. 8, pp. 1141-1147.

Kampel, G., Goldsztein, G.H. and Santamarina J.C. (2009). Particle Transport in Porous Media. The Role of Inertial Effects and Path Tortuosity on Particle Velocity - Implications, Applied Physics Letters, vol. 95, DOI:10.1063/1.3263718.

Narsilio, G.A., Santamarina, J.C., Hebeler, T and Bachus, R. (2009). Blast Densification: A Multi-instrumented Case History, J. Geotechnical and Geoenvironmental Eng., vol. 135, no. 6, pp. 723-734.

Díaz-Rodríguez, A.J, Martínez-Vázquez, J.J. and Santamarina, J.C. (2009). Strain Rate Effects in Mexico City Soils, J. Geotechnical and Geoenvironmental Eng., vol 135, no. 2, pp. 300-305.

Kim, H.K. and Santamarina, J.C. (2008). Sand-Rubber Mixtures (Large Rubber Chips). Canadian Geotechnical J., vol. 45, no. 10, pp. 1457-1465.

Lee, J.Y., Santamarina, J.C. and Ruppel, C.D. (2008). Mechanical and Electromagnetic Properties of Gulf of Mexico Sediments With and Without THF Hydrates, Marine and Petroleum Geology, vol. 25, no. 9, pp. 884-895.

Kim H.K. and Santamarina, J.C. (2008). Spatial Variability: Drained and Undrained Deviatoric Response, Geotechnique, vol. 58, no. 10, pp. 805-814.

Narsilio, G.A. and Santamarina J.C. (2008). Terminal Densities, Geotechnique. vol. 58, no. 8, pp. 669-674.

Yun, T.S. and Santamarina, J.C. (2008). Fundamental Study of Thermal Conduction in Dry Soils, Granular Matter, vol. 10, no. 3, pp. 197-207. DOI 10.1007/s10035-007-0051-5

Palomino, A., Burns, S.E. and Santamarina, J.C. (2008). Mixtures of Fine Grained Minerals – Kaolinite and Carbonate Grains, Clays and Clay Minerals, vol. 56, no. 6, pp. 599-611.

Shin, H., Santamarina, J.C. and Cartwright, J. (2008). Contraction-Driven Shear Failure in Compacting Uncemented Sediments, Geology, vol. 36, no. 12, pp. 931-934.

Imhof, A.L., and Santamarina, J.C. (2008). Seismic Velocity Determination in Gravel and Sands Using Piezocrystals, Earth Science Research J., vol. 12, no. 1, pp.107-117.

Valdes, J.R. and Santamarina, J.C. (2008). Clogging: Bridge Formation and Vibration-Based Destabilization, Canadian Geotechnical J., vol. 45, no. 2, pp. 177-184.

Cortes, D., Kim H.K., Palomino, A.M. and Santamarina, J.C. (2008). Mortars Made with Manufactured Sands: Flow, Stiffness and Strength, Cement and Concrete Research, vol. 38, pp. 1142-1147

Kampel, G., Goldsztein, G.H. and Santamarina J.C. (2008). Plugging in Porous Media: Maximum Clogged Porosity and Optimal Filter Topologies, Applied Physics Letters, vol. 92, no. 8.

Kwon, T.H., Cho, G.C. and Santamarina J.C. (2007). Hydrate Dissociation in Sediments: Pressure-Temperature Evolution, Geochemistry, Geophysics, Geosystems, vol. 9, No. 2, Q03019, DOI:10.1029/2007GC001920.

Lee, J.S., Guimaraes, M. and Santamarina, J.C. (2007). Micaceous Sands: Microscale Mechanisms and Macroscale Response, J. Geotechnical and Geoenvironmental Eng., vol. 133, no. 9, pp. 1136-1143.

Cho, G.C., Dodds, J.S. and Santamarina, J.C. (2007). Closure to discussion on Particle Shape Effects On Packing Density, Stiffness And Strength – Natural And Crushed Sands, J. Geotechnical and Geoenvironmental Eng., vol. 133, pp. 1473-1474.

Kim H.K., Cortes, D. and Santamarina, J.C. (2007). The Flow Test: Particle Level and Macroscale Analyses, ACI Materials J., vol. 104, no. 3, pp. 323-327.

Yun, T.S., Santamarina, J.C. and Ruppel, C. (2007). Mechanical Properties of Sand, Silt, And Clay Containing Tetrahydrofuran Hydrate, J. Geophysical Research. – B: Solid Earth, 112.

Wang, Y.H. and Santamarina, J.C. (2007). Attenuation in Sand – An Exploratory Study on the Small-Strain Behavior and The Influence Of Moisture Condensation, Granular Matter, vol. 9, no. 6, pp. 365-376.

Lee, J.S. and Santamarina, J.C. (2007). Seismic Monitoring Short-Duration Events: Liquefaction in 1g Models. Canadian Geotechnical J., vol. 44, pp. 659-672.

Rebata-Landa, V., Valdes, J.R., and Santamarina, J.C. (2007). Encuentro de Profesores Latinos de Geotecnia, Revista Internacional de Desastres Naturales (Brief communication – No technical content). vol. 6, no. 2, pp. 107-109.

Valdes, J.R. and Santamarina, J.C. (2007). Particle Transport in a Non-Uniform Flow Field: Retardation and Clogging, Applied Physics Letters, vol. 90, no. 24.

Lee, J.Y., Yun, T.S., Santamarina, J.C. and Ruppel, C. (2007). Observations Related To Tetrahydrofuran and Methane Hydrate for Laboratory Studies of Hydrate-Bearing Sediments, Geochemistry, Geophysics, Geosystems, vol. 8, no. 6.

Mitchell, J.K. and Santamarina, J.C. (2007). Closure to discussion, Biological Considerations in Geotechnical Engineering, J. Geotechnical and Geoenvironmental Eng., vol. 133, pp. 486.

Guimaraes, M.S., Valdes, J.R., Palomino, A.M. and Santamarina, J.C. (2007). Aggregate Production: Fines Generation, International J. Mineral Processing, vol. 81, no. 4, pp. 237-247.

Lee, J.S., Dodds J. and Santamarina, J.C. (2007). Behavior of Rigid-Soft Particle Mixtures, J. Materials In Civil Engineering, vol. 19, no. 2, pp. 179-184.

Lizcano A., Herrera, M.C. and Santamarina, J.C. (2006). Suelos Derivados de Cenizas Volcánicas en Colombia, Revista Internacional de Desastres Naturales, vol. 6, no. 2, pp. 167-198.

Santamarina, J.C. (2006). The Worldwide Energy Situation, Anales Academia Nacional de Ingenieria., vol. II-06, pp. 79-98.

Rebata-Landa, V. and Santamarina, J.C. (2006). Mechanical Limits to Microbial Activity in Deep Sediments, G-Cubed Geochemistry, Geophysics and Geosystems, vol. 7, no. 11, pp. 1-12.

Yun, T.S., Narsilio, G.A. and Santamarina, J.C. (2006). Geotechnical Characterization Of Gulf Of Mexico Sediments, Marine and Petroleum Geology, vol. 23, pp. 893-900.

Fratta, D. and Santamarina, J.C. (2006). Damage Caused by Hurricane Katrina in Biloxi, Mississippi, Revista de Desastres Naturales (in Spanish).

Lee, J.S. and Santamarina, J.C. (2006). Discussion to the paper by Leong, E.C., Yeo, S.H. and Rahardjo, H. Measuring Shear Wave Velocity Using Bender Elements, Geotechnical Testing J., ASTM, vol. 29, no. 5, pp. 439-441.

Yun, T.S., Narsilio, G.A., Santamarina, J.C. and Ruppel, C. (2006). Instrumented Pressure Testing Chamber for Characterizing Sediment Cores Recovered at In Situ Hydrostatic Pressure, Marine Geology, vol. 229, pp. 285-293.

Cho, G.C., Dodds, J.S. and Santamarina, J.C. (2006). Particle Shape Effects On Packing Density, Stiffness And Strength – Natural And Crushed Sands, J. Geotechnical and Geoenvironmental Eng., vol. 132, no. 5, pp. 591-602.

Valdes, J.R. and Santamarina, J.C. (2006). Particle Clogging in Radial Flow: Microscale Mechanisms,

J. the Society of Petroleum Engineers SPE, vol. 11, no. 2, pp. 193-198.

Francisca, F.M., Yun, T.S., Ruppel, C.D. and Santamarina, J.C. (2005). Geophysical and geotechnical properties of near-surface sediments in the northern Gulf of Mexico gas hydrate province, Earth and Planetary Science Letters, vol. 237, pp. 924-939.

Zerwer, A., Polak, M.A., Santamarina, J.C. (2005). Detection of Surface Breaking Cracks in Concrete Members using Rayleigh Waves, J. Environmental & Engineering Geophysics, vol. 10, no.3, pp. 295-306.

Yun, T.S., Francisca, F.M., Santamarina, J.C. and Ruppel, C. (2005). Compressional and Shear Wave Velocities in Uncemented Sediment Containing Gas Hydrate, Geophysical Research Letters, 32(10). May, L10609. DOI:10.1029/2005GL022607.

Palomino, A. and Santamarina, J.C. (2005). Fabric Map For Kaolinite (Single Mineral): Effects of pH And Ionic Concentration On Behavior, Clays and Clay Minerals, vol. 53, no. 3, pp. 211-223.

Lee, J.S., Fernandez, A. and Santamarina, J.C. (2005). S-Wave Velocity Tomography Small-Scale Laboratory Application, Geotechnical Testing J., vol. 28, no. 4, pp. 336-344.

Lee, J.S. and Santamarina, J.C. (2005). Bender Elements: Performance and Signal Interpretation, J. Geotechnical and Geoenvironmental Eng., vol. 131, no. 9, pp. 1063-1070.

Yun, T.S. and Santamarina J.C. (2005). Decementation, Softening and Collapse: Changes in Small-Strain Shear Stiffness in $k_0$ Loading, J. Geotechnical and Geoenvironmental Eng., vol. 131, no. 3, pp. 350-358.

Mitchell, J.K. and Santamarina, J.C. (2005). Biological Considerations in Geotechnical Engineering, J. Geotechnical and Geoenvironmental Eng., vol. 131, no. 10, pp. 1222-1233.

Lee, J.S. and Santamarina, J.C. (2005). P-wave Reflection Imaging, Geotechnical Testing J., vol. 28, pp. 197-206.

Klein, K. and Santamarina J.C. (2005). Behavior of Very Soft Sediments: Wave-Based Monitoring, International J. Geomechanics, vol. 5, no. 2, pp. 147-157.

Goldsztein, G. and Santamarina, J.C. (2004). Suspension Extraction Prior to Clogging, Applied Physics Letters, vol. 85, pp. 4535-4537.

Goldsztein, G. and Santamarina, J.C. (2004). Solute Transport During Cyclic Flow In Saturated Porous Media, Applied Physics Letters 85, 2432-2434 (Selected for the October 1, 2004 issue of Virtual J. Biological Physics Research).

Cho, G.C., Lee, J.S. and Santamarina, J.C. (2004). Spatial Variability: High-resolution Assessment with Electrical Needle Probe, J. Geotechnical and Geoenvironmental Eng., vol. 130, no. 8, pp. 843-850.

Klein, K. and Santamarina J.C. (2003). Electrical Conductivity In Soils: Underlying Phenomena, J. Environmental Engineering Geophysics, vol. 8, no. 4, pp. 263-273.

Fernandez, A.L. and Santamarina, J.C. (2003). Design Criteria for Geotomographic Field Studies, Geotechnical Testing J., vol. 26, no. 4, pp. 410-420.

Wang, Y.H., Santamarina, J.C., Cascante, G. (2003). Counter EMF effects in Resonant Column Testing, Geotechnical Testing J., vol. 26, no. 3, pp. 342-352.

Zerwer, A., Polak, M.A., Santamarina, J.C. (2003). Rayleigh Wave Propagation for the Detection of Near Surface Discontinuities: Finite Element Study, J. Nondestructive Evaluations, vol. 22, pp. 39-52.

Francisca, F., Rinaldi, V. and Santamarina, J.C. (2003). Instability of Hydrocarbons Films over Mineral Surfaces – Microscale Experimental Studies, J. Environmental Engineering, vol. 129, no. 12, pp. 1120-1128.

Klein, K. and Santamarina, J.C. (2003). Discussion to the paper by Blewett, J., Mccarter, W. J., Chrisp, T. M. and Starrs, G., on Monitoring Sedimentation of a Clay Slurry, Géotechnique, vol. 51-8, pp. 723-728.

Santamarina, J.C. and Fratta, D.O. (2003). Dynamic Energy Coupling - Electro-seismic and Seismo-electric Effects, J. Transport in Porous Media, vol. 50, no. 1-2, pp. 153-178.

Zerwer, A., Polak, M.A. and Santamarina, J.C. (2002). Effect of Surface Cracks on Rayleigh Wave Propagation: An Experimental Study, J. Structural Engineering, vol. 128, no. 2, pp. 240-248.

Fratta, D. and Santamarina, J.C. (2002). Shear Wave Propagation in Jointed Rock - State of Stress-. Geotechnique, vol. 52, no. 7, pp. 495-505.

Santamarina, J.C., Klein, K.A., Wang, Y.H. and Prencke, E. (2002). Specific Surface: Determination and Relevance, Canadian Geotechnical J., vol. 39, no. 1, pp. 233-241.

Wang, Y. H. and Santamarina, J.C. (2002). Non-Linear Dynamic Effects in Frictional Geomaterials – Stochastic Resonance, J. Geotechnical and Geoenvironmental Eng., vol. 128, no. 11, pp. 952-962.

Díaz-Rodríguez, J.A. and Santamarina, J.C. (2001). Mexico City Soil Behavior At Different Strains – Observations And Physical Interpretation-, J. Geotechnical and Geoenvironmental Eng., vol. 127, no. 9, pp. 783-789.

Santamarina, J.C. and Cho, G.C. (2001). Determination of Critical State Parameters in Sandy Soils – Simple Procedure, Geotechnical Testing J., vol. 24, no. 2, pp. 185-192.

Fernandez, A. and Santamarina, J.C. (2001). The Effect of Cementation on the Small Strain Parameters of Sands, Canadian Geotechnical J., vol. 38, no. 1, pp. 191-199.

Cho, G.C. and Santamarina, J.C. (2001). Unsaturated Particulate Materials – Particle Level Studies, J. Geotechnical and Geoenvironmental Eng., vol. 127, no. 1, pp. 84-96.

Prada, J., Fratta, D. and Santamarina, J.C. (2000). Tomographic Detection of Low-velocity Anomalies With Limited Data Sets (Velocity and Attenuation). Geotechnical Testing J., vol. 23, no. 4, pp. 472-486.

Klein, K. and J.C. Santamarina (2000). Ferromagnetic Inclusions in Geomaterials – Implications, J. Geotechnical and Geoenvironmental Eng., vol. 126, pp. 167-179.

Zerwer, A., Polak, M.A. and Santamarina, J.C. (1999). Experimental Investigation of Wave Propagation in Thin Plexiglas Plates: Implications for Modeling and Measuring Rayleigh Waves, Non Destructive Testing and Evaluation International, vol. 33, no. 1, pp. 33-41.

Cascante, G., Santamarina, J.C. and, Yassir, N. (1998). Flexural Excitation in a Standard Torsional-Resonant Column Device, Canadian Geotechnical J., vol. 35, no. 3, pp. 478-490.

Santamarina, J.C. and Cascante, G. (1998). Effect of Surface Roughness on Wave Propagation Parameters, Geotechnique, vol. 48, no. 1, pp. 129-137.

Gheshlaghi, F. and J.C. Santamarina (1998). Data Pre-Processing in Cross-Hole Geotomography, J. Environmental and Engineering Geophysics, vol. 3, no. 1, pp. 41-47.

Fam, M., Santamarina, J.C. and Dusseault, M. (1998). Wave-Based Monitoring Processes in Granular Salt, J. Environmental & Engineering Geophysics, vol. 3, no. 1, pp. 15-26.

Santamarina. J.C. and Fam, M. (1997). Discussion to the paper by Giulia Viggiani and J. H. Atkinson, on the Interpretation of Bender Element Tests, Géotechnique, vol. 47, no. 4, 873-875.

Santamarina, J.C. and Fam, M. (1997). Dielectric Permittivity of Soils Mixed with Organic and Inorganic Fluids (0.02 GHz to 1.30 GHz). J. Env. & Eng. Geophysics, vol. 2, no. 1, pp. 37-52.

Cascante, G. and Santamarina, J.C. (1997). Low-Strain Measurements Using Random Noise Excitation, Geotechnical Testing J., vol. 20, no. 1, pp. 29-39.

Klein, K. and Santamarina, J.C. (1997). Methods for Broadband Dielectric Permittivity Measurements (Soil-Water Mixtures, 5 Hz to 1.3 GHz). Geotechnical Testing J., vol. 20, no. 2, pp. 168-178.

Fam, M. and Santamarina, J.C. (1997). A Study of Consolidation Using Mechanical and Electromagnetic Waves, Geotechnique, vol. 47, no. 2, pp. 203-219.

Klein, K. and Santamarina, J.C. (1996). Discussion to the paper by J.Q. Shang, K.Y. Lo and I.I. Inculet,

on the Polarization and Conduction of Clay-Water-Electrolyte Systems, J. Geotechnical Engineering, vol. 122, no. 11, pp. 954-955.

Cascante, G. and Santamarina, J.C. (1996). Interparticle Contact Behavior and Wave Propagation, Geotechnical J., vol. 122, no. 10, pp. 831-839.

Fam, M. and Santamarina, J.C. (1996). Coupled Diffusion-Fabric-Flow Phenomena: An Effective Stress Analysis, Canadian Geotechnical J., vol. 33, no. 3, pp. 515-522.

Santamarina, J.C. and Cascante, G. (1996). Stress anisotropy and wave propagation – A micromechanical view, Canadian Geotechnical J., vol. 33, no. 5, pp 770-782.

Fratta, D. and Santamarina, J.C. (1996). Waveguide Device for Multi-Mode, Wideband Testing Wave Propagation in Soils, Geotechnical Testing J., vol. 19, no. 2, pp. 130-140.

Fam, M. and Santamarina, J.C. (1996). Study of Clay-Cement Slurries with Mechanical and Electromagnetic Waves, J Geotechnical Eng., vol. 122, no. 5, pp. 365-373.

Santamarina, J.C. and Fam, M. (1995). Changes in Dielectric Permittivity and Shear Wave Velocity During Concentration Diffusion, Canadian Geotechnical J., vol. 32, no. 4, 647-659.

Fam, M. and Santamarina, J.C. (1995). Study of Geoprocesses with Complementary Wave Measurements in an Oedometer, Geotechnical Testing J., vol. 18, no. 3, pp. 307-314.

Aloufi, M. and Santamarina, J.C. (1995). Low and High Strain Mechanical Properties of Grain Masses – The Effect of Particle Eccentricity, Transactions ASAE, vol. 38, no. 3, pp. 877-887.

Zerwer, A. and Santamarina, J.C. (1994). Double Layers in Pyrometamorphosed Bentonite: Index Properties and Complex Permittivity, Applied Clay Science, vol. 9, pp. 283-291.

Santamarina, J.C., Graham, J., MacDougall, C. and Roy, V. (1994). Tomographic Imaging Changes in Effective Stress in Granular Media (Simulation Study). Transportation Research Record, no. 1415, pp. 95-99.

Santamarina, J.C. and Reed, A.C. (1994). Ray Tomography: Errors and Error Functions, J. Applied Geophysics, vol. 32, pp. 347-355.

Santamarina, J.C. and Potts, B. (1994). On the Imaging of Stress Changes in Particulate Media –An Experimental Study, Canadian Geotechnical J., vol. 31, no. 2, pp 215-222.

Matyas, E.L. and Santamarina, J.C. (1994). Negative Skin Friction and the Neutral Plane, Canadian Geotechnical J., vol. 31, no. 4, pp. 591-597.

Cesare, M.A., Santamarina, J.C., Turkstra, C. and Vanmarcke, E. (1994). Risk-Based Bridge Management: Optimization and Inspection Scheduling, Canadian J. Civil Eng., vol. 21, no. 6, pp. 897-902.

Potts, B.D. and Santamarina, J.C. (1993). Geotechnical Tomography: The Effects of Diffraction, Geotechnical Testing J., vol. 16, no. 4, pp. 510-517.

Cesare, M.A., Santamarina, J.C., Turkstra, C. and Vanmarcke, E (1993). Risk Based Bridge Management, J Transportation Engineering, vol. 119, no. 5, pp. 742-750.

Tallin, A.G. and Santamarina, J.C. (1992). Digital Ray Tracing for Geotomography, IEEE Transactions on Geoscience and Remote Sensing, vol. 30, no. 3, pp. 617-619.

Santamarina, J.C., Altschaeffl, A.G. and Chameau, J.L. (1992). Reliability of Slopes: Incorporating Qualitative Information, Trans Research Record, no. 1343, pp. 1-5.

Cesare, M.A., Santamarina, J.C., Turkstra, C. and Vanmarcke, E. (1992). Modeling Bridge Deterioration with Markov Chains, J Transportation Engineering. Vol. 118, no. 6, pp. 820-833.

Santamarina, J.C., Wakim, T.N., Tallin, A.G., Rab, F and Wong, J. (1991). Piezo Films in Geotechnical Testing, Geotechnical Testing J., vol. 14, no. 4, pp. 363-370.

Santamarina, J.C. and Salvendy, G. (1991). Fuzzy Sets Based Knowledge Systems and Knowledge Elicitation, Behavior and Information Technology, vol. 10, no. 1, pp. 23-40.

Santamarina, J.C. and Akhoundi, K. (1991). Findings in Creativity and Relevance in Civil Engineering, J. Professional Issues, vol. 117, no. 2, pp. 155-167.

Tallin, A.G. and Santamarina, J.C. (1990). Geotomography in Site Investigations: Simulation Study, Geotechnical Testing J., vol. 13, no. 2, pp. 129-133.

Santamarina, J.C. and Chameau, J.L. (1990). Fuzzy Windows and Classification System, International J. Man Machine Studies, vol. 32, pp. 187-201.

Santamarina, J.C. (1989). Discussion to the Paper by D. A. Bella (1987). Organizations and Systematic Distortion of Information, J. Profes. Issues in Eng., vol. 115, no. 4, pp. 458-460.

Santamarina, J.C. and Goodings, D.J. (1989). Centrifuge Modeling: A Study of Similarity, Geotechnical Testing J., vol. 12, no. 2, pp. 163-166.

Santamarina, J.C. and Chameau, J.L. (1989). Limitations in Decision Making and System Performance, J. Performance of Constructed Facilities, vol. 3, no. 2, pp. 78-86.

Goodings, D.J. and Santamarina, J.C. (1989). Reinforced Earth and Adjacent Soils: A Centrifuge Modeling Study, J. Geotechnical Engineering, July, vol. 115, no. 7.

Chameau, J.L. and Santamarina, J.C. (1989). KBS for Soil Improvement, J. Computing in Civil Engineering, July, vol. 3, no. 3, pp. 253-267.

Santamarina, J.C. and Chameau, J.L. (1987). Membership Functions II: Trends in Fuzziness and Implications, International J. Approximate Reasoning, vol. 1, pp. 303-317.

Santamarina, J.C. and Chameau, J.L. (1987). Expert Systems for Geotechnical Engineers, J. Computing in Civil Engineering, vol. 1, pp. 241-252.

Chameau, J.L. and Santamarina, J.C. (1987). Membership Functions I: Comparing Methods of Measurement, International J. Approximate Reasoning, vol. 1, pp. 287-301.

Leonards, G. A., Santamarina, J.C. and others (1986). Discussion to the paper by Clayton, et. Al. (1985). Dynamic Penetration Resistance and the Prediction of the Compressibility of a Fine-Grained Sand – A Laboratory Study, Geotechnique, vol. 36, pp. 275-279.

Santamarina, J.C. and Schwartz C. W. (1985). Discussion to the paper by J.S. Horvath: New Subgrade Model Applied to Mat Foundations, J. Geotechnical Engineering, vol. 111, no. 11.

## C. SPECIAL CONTRIBUTIONS AND REVIEW ARTICLES (NON-REFEREED JOURNALS)

Rodriguez-Hernandez, C.D., Liu, M., Volkova, E., Yan, B. and Turkiyyah, G., Santamarina, J.C. (2023). Shales: from the atomic scale to the rock-mass scale. ARMA Conference.

Santamarina J.C., Aftab A., Espinoza D.N., Dusseault M., Gens A., Hoteit H., Kim S., Lee JY., Lei L., Narsilio G., Pereira JM., Sanchez M., Soga K., Villar MV., Violay M. (2022), Energy geo-engineering, State of the Art Report, Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering.

Santamarina, J.C. and Rached, R. (2021). Energy Geoscience and Engineering, 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics IACMAG, Eds. M. Barla, A. Di Donna, D. Sterpi. Springer, vol. 1, pp. 75-97.

Santamarina, J.C. and Sun, Z. (2017). Mixed Fluid Conditions: Capillary Phenomena. Poromechanics VI, Proceedings Biot Conference, Paris. July, Ed. M. Vandamme, pp. 70-89.

Santamarina, J.C. and Jang, J. (2010). Energy Geotechnology: Implications Of Mixed Fluid Conditions, Proc. 5th International Conference on Unsaturated Soils, Unsat 2010, Barcelona, Eds. A. Gens and E. Alonso.

Fratta, D., Schuettpelz, C. C., and Santamarina, J. C. (2007). Hurricane Katrina: Geotechnical

Observations in Biloxi, Mississippi. GeoStrata. January/February.

Herrera, M.C., Lizcano A. and Santamarina C. (2007). Colombian Volcanic Ash Soils, in Characterization and Engineering Properties of Natural Soils. Eds. Tan, Phoon, Hight and Leroueil, Taylor and Francis, pp. 2385-2409.

Santamarina, J.C., (2006). Geotechnology: Paradigm Shifts In The Information Age, Proc. ASCE Geotechnical Engineering in the Information Technology, Atlanta.

Santamarina, J.C. (2004). Particle-level Phenomena and Macroscale Soil Behavior, 3rd International Conference on the Deformation Characteristics of Geomaterials, Lyon, September.

Santamarina, J.C. and Cho, G.C. (2004). Soil Behavior: The Role of Particle Shape. Proc. Skempton Conference, March, London.

Santamarina, J.C. (2003). Creativity and Engineering Education, Proc. Int. Conference on Engineering Education in Honor of J.T.P Yao, Texas A&M. pp. 99-107 (Reprinted in Korean, Civil Engineering, vol 53, no. 12, pp. 85-114, 2005).

Santamarina, J.C. (2003). Soil Behavior at the Microscale: Particle Forces, in Soil Behavior and Soft Ground Construction - The Ladd Symposium, October, MIT, Boston, ASCE Special Publications n. 119, pp. 25-56.

Santamarina, J. C., Klein, K., Palomino, A. and Guimaraes, M. (2002). Micro-Scale Aspects Of Chemical-Mechanical Coupling - Interparticle Forces And Fabric. In Chemical Behaviour: Chemo-Mechanical Coupling from Nano-Structure to Engineering Applications, Edts., C. Di Maio, T. Hueckel and B. Loret, June, Maratea, Balkema, Rotterdam, pp. 47-64.

Stokoe, K.H. and J.C. Santamarina (2000). Seismic-Wave-Based Testing in Geotechnical Engineering, GeoEng 2000, Melbourne, Australia, November, pp. 1490-1536 (State-of-the-Art).

Santamarina, J.C. and Aloufi, M. (1999). Small Strain Stiffness: A Micromechanical Experimental Study, Proc. of Pre-failure Deformation Characteristics of Geomaterials, Edited by M. Jamiolkowski, R. Lancellotta and D. Lo Presti, Torino, Italy. Balkema, Rotterdam, pp. 451-458.

Díaz-Rodríguez, J.A. and Santamarina, J.C. (1999). Thixotropy: The Case of Mexico City Soils, XI Panamerican Conf. on Soil Mech. and Geotech. Eng., Iguazu Falls, Brazil, vol. 1 pp. 441-448.

Santamarina, J.C. (1997). 'Cohesive Soil:' A Dangerous Oxymoron, The Electronic J. Geotechnical Eng. – Magazine, August. URL: http://geotech.civen.okstate.edu/Magazine.

Santamarina, J.C., Morley, M., Franklin, J.A and Wang, D.S. (1996). Development and Testing of a Zooming Technique for Fragmentation Measurement, Fragmentation Measurement, Edited by J. Franklin, A. Rustan and T. Katsabanis, Balkema, Rotterdam, pp. 133-139.

Ahtchi Ali, F. and Santamarina, J.C. (1994). Settlement of Footings on Granular Materials: Low and High Strain Parameters, Proc. Vertical and Horizontal Deformations of Foundations and Embankments, ASCE-GSP#40, Edited by A.T. Yeung and G.Y. Felio, pp. 1287-1297.

Santamarina, J.C. and Wakim, Y.N. (1992). Principles of Soil Modification with Electromagnetic Waves: Applications to Environmental Geotechnology, Grouting, Soil Improvement and Geosynthetics, ASCE-SP, February, pp. 1380-1392.

Santamarina, J.C. and Wakim, T. N. (1991). Geotechnical Tomography: Theory and Practice, 1st Geotechnical Engineering Conference, Egypt, 30 pages.

Santamarina, J.C. and Turkstra, C.L. (1989). Human Factors and Communication Problems in Foundation Engineering, Foundation Engineering: Current Principles and Practices, F.H. Kulhawy ed., vol. 2, pp. 857-868.

Santamarina, J.C. (1989). Rock Excavation with Microwaves: A Literature Review, Foundation Engineering: Current Principles and Practices, F.H. Kulhawy ed., vol. 1, pp. 459-473.

## D. PUBLICATIONS IN CONFERENCE PROCEEDINGS – OTHERS

Davalos-Monteiro, J., Qi L., and Santamarina JC. (2024), CH4-CO2 exchange in shales, INTERPORE

Muñoz-Ibañez, A. and Santamarina, J.C. (2024). Carbon Mineralization in Mafic Formations: Fracture topology and hydro-chemo-mechanical coupling, ARMA.

Smith, J.E. and Santamarina, J.C. (2022). The Formation, Creep, and Self-Preservation of Marine Evaporites, Constrained by Red Sea Field Observations, SEG Egypt: The Red Sea: Unlocking Future Hydrocarbon Potential, March.

Cha W, Smith J, and Santamarina JC (2022). Distributed Seafloor Observatory – Monitoring Processes in the Red Sea, SEG Egypt: The Red Sea: Unlocking Future Hydrocarbon Potential, March.

Liu, Q., Benitez, M. and Santamarina J.C. (2020). Capillarity vs. Saturation in Fracture-Matrix Systems, InterPore, May, Qingdao, China.

Terzariol, M. and Santamarina J.C. (2020). Strategies for Gas Production by Depressurization, 10th International Conference on Gas Hydrates (ICGH10). June 21-26, 2020, Singapore.

Zhao, B., Cha, W. and Santamarina J.C. . (2019). Phase-Encoded MRI: A Valuable Tool for Sediment Characterization and Process Monitoring, 15th International Conference on Magnetic Resonance Microscopy, Paris. (Abstract)

Santamarina, J.C., Garcia, A., Hakiki, F., Park, J. and Zhao, B. (2019), Multiphysics Sediment characterization and process monitoring. Fifth International Conference on Engineering Geophysics ICEG2019, Al-Ain, UAE, October 2019, pp. 163-166.

Salva, M., Castro, G., Terzariol, M., Hakiki, F., Cha, W., and, Santamarina J.C. (2019). Soil Characterization: Lab-on-a-Bench, Pan-American (Abstract)

Finkbeiner T., and Santamarina J.C. (2019). xxx yyy zzz , ARMA Conference.

Perbawa A., Gramajo E., Finkbeiner T., and Santamarina J.C. (2019). Global vs Local Strain Measurements in Triaxial Tests – Implications, ARMA Conference.

Salva, M., Castro, G.M., Terzariol, M. and Santamarina, J.C. (2018). Soil Properties: Database + IT-Tool + Lab-on-a-Bench, IS-2018 Atlanta. In print.

Garcia, A. and Santamarina, J.C. (2018). Thermal Conduction in Fractured Rocks, IS-2018 Atlanta. In print.

Roshankhah, S., Cruz, L. G., Shin, H., Lizcano, A., Santamarina, J.C., Hydraulic Fracture In Pre-Structured Media, International Symposium on Energy Geotechnics, SEG-2018, Lausanne.

Rached, R., Garcia, A., and Santamarina, J.C. (2018). Hydraulic Fracturing in Pre-fractured Media, International Symposium on Energy Geotechnics, SEG-2018, Lausanne.

Terzariol, M., Sun, Z. and Santamarina, J.C. (2018). Methane Hydrate Bearing Sediments: An Analysis of Production Strategies, International Symposium on Energy Geotechnics, SEG-2018, Lausanne.

Zhao, B., Liu, Q. and Santamarina, J.C. (2018). Particle migration and clogging in radial flow – A microfluidics study. Proc. Micro-to-Macro, Calabria, Italy.

Santamarina, J.C. and Park, J.H. (2017). Geophysical Properties of Soils, 4th International Conference on Engineering Geophysics (ICEG). Extended abstract – Abridged version of full paper by the authors.

Santamarina J.C. and Shin H. (2017). Deep Foundation Concepts in Energy Geo-engineering - Special Cases, International Conference on Deep Foundations, International Congress in Foundation Engineering, Bolivia, April 2017.

Sánchez M., Santamarina JC, Gai X, and Teymouri M (2017). Invited presentation: "Coupled numerical modeling of gas hydrates bearing sediments from laboratory to field-scale conditions" (abstract only). 2017 AGU Fall Meeting. New Orleans, USA. 11th to 15st Dec. 2017.

Terzariol, M. and Santamarina, J.C. (2017). Sampling Disturbance during Pressure Coring, 19th ICSMGE, Seoul.

Gai X, Sánchez M., Santamarina JC. (2017). "A Constitutive Mechanical Model for Gas Hydrate Bearing Sediment". 9th International Conference for Gas Hydrates (ICGH 2017). 25th to 30th 2017 Jun. Denver, USA.

Park, J.H. and Santamarina, J.C. (2017). Towards an Enhanced Soil Classification System, 19th ICSMGE, Seoul.

Kim S. and Santamarina, J.C. (2016). "Rock crushing using microwave pre-treatment." Geo-Chicago 2016: Sustainable Materials and Resource Conservation, 720-729.

Sánchez M., Santamarina J.C., Shastri A., and Gai X, (2015). Numerical Modeling of Gas Hydrate Bearing Sediments. XVI ECSMGE European Conference on Soil Mechanics and Geotechnical Engineering, Edinburgh, UK, 13th to 17th Sep. 2015.

Santamarina, J.C. (2015). Academia in Changing Times. Revista del Colegio de Ingenieros de Córdoba (essay prepared for the Doctorate Honoris Causa, UNCba).

Santamarina, J.C. (2015). Energy GeoEngineering: Storage, 1st Int. Conference Geo Energy and Geo-Environmental Engineering, Hong Kong, pp. 21-22 (extended abstract).

Santamarina, J.C. (2015). Landslides: Role of Geology and Geotechnics – Lessons Learned. Summary of contributions to Prague Geotechnical Days 2015 (www.issmge.cz).

Bachus, R.C., Santamarina, J.C (2015), Geotechnical Properties And Diagenesis Of Ponded Fly Ash. US Society on Dams, Kentucky [Note: parallels the other conference paper on the same theme by Bachus et al., 2014].

Sánchez M., Shastri A., Gai X, and Santamarina J.C., (2015). Numerical Modeling of Gas Hydrate Bearing Sediments. Computer Methods and Recent Advances in Geomechanics: Proceedings of the 14th International Conference of International Association for Computer Methods and Recent Advances in Geomechanics, 2014 (IACMAG 2014). Taylor & Francis Books Ltd. 1753-1758.

Santamarina, J.C. (2014). [What] to Teach or Not to Teach – This is the Question. Geotechnique Letters blog.

Santamarina, J.C. (2014). Pressure Core Characterization, # 22438, AGU 2014

Coupled THCM Modeling of Gas Hydrate Bearing Sediments, #17409, AGU 2014

Instrumented Pressure Testing Chamber (IPTC) Characterization of Methane Gas Hydrate-Bearing Pressure Cores Collected from the Methane Production Test Site in the Eastern Nankai Trough, Offshore Japan, #11221, AGU 2014.

Bachus, R.C., Santamarina, J.C., Amaya, PJ, Ladwig, KJ and Webb, TE (2014). Ponded Fly Ash, Ponded Fly Ash, ASCE Geo Congress, Atlanta.

Kim, S. and Santamarina, J.C. (2014). Geological CO2 Storage: Reactive Fluid Transport - Pore-Scale Study, ASCE GeoCongress, Atlanta.

Sanchez, M., Gai, X., & Santamarina, J.C (2014), Coupled multiphysics modeling of gas hydrate bearing sediments. In A. Bajaj, P. Zavattieri, M. Koslowski, & T. Siegmund (Eds.). *Proceedings of the Society of Engineering Science 51st Annual Technical Meeting, October 1-3, 2014.*

Savioli, A., Viggiani, C. and Santamarina, J.C (2014). Root-Soil Mechanical Interaction, ASCE GeoCongress.

Papadopoulos, E. and Santamarina, J.C. (2014). Optimization of Inverted Base Pavement Designs with Thin Asphalt Surfacing, ASCE GeoCongress.

Arson, C.F. and Santamarina, J.C. (2014). Bio-Inspired Porous Network Topology for Optimal Injection and Withdrawal Processes in Soils, ASCE GeoCongress.

Shastri, A., Sanchez, M., and Santamarina, J.C. (2013). Modeling Gas Hydrate Bearing Sediments Using

a Coupled Approach, Proc. Pan-American Conf. on Unsaturated Soils, Cartagena, Colombia, Eds. B. Caicedo, et al., pp. 545-550.

Chang, I., Cho, G.C., and Santamarina, J.C. (2013). "Soil erosion control and vegetation stabilization using biogenic biopolymers", The 5 th International Young Geotechnical Engineers' Conference (iYGEC). August 31-September 1, Ecole des Ponts ParisTech, Paris, France, pp. 77-80.

Burns, S.E. and Santamarina, J.C. (2012). Diversity in Action, GeoStrata

Santamarina, J.C., S. Dai, J. Jang, M. Terzariol, Papadopoulos, E., W.J. Winters, D. Mason,W. Waite, and E. Bergeron (2012). Pressure Core Characterization Tools to Enhance Gas Hydrate Field Programs, DOE Fire in the Ice, vol. 12, n. 2, pp. 7-9

Cortes, D.D. and Santamarina, J.C. (2012). Engineered Soils: Thermal Conductivity, Proc of the 2012 World Congress on Advances in Civil, Environmental, and Materials Research (ACEM'12).

Waite, W.F., J.C. Santamarina, M. Rydzy, S.H. Chong, J.L.H. Grozic, K. Hester, J. Howard, T.J. Kneafsey, J.Y. Lee, S. Nakagawa, J. Priest, E. Rees, C. Koh, E.D. Sloan, A. Sultaniya (2012). Overview of the Inter-laboratory comparison of wave velocity measurements in sand with gas hydrate and other pore-filling material, DOE Fire in the Ice, vol. 12, n. 1, pp. 16-21

Bachus, R.C., Santamarina, J.C, Amaya, PJ, Ladwig, KJ and Webb, TE (2013). Geotechnical Properties of Ponded Fly Ash and the Potential for Static Liquefaction, World of Coal Ash, Kentucky (Extended Abstract)

Bang, ES, Son, JS and Santamarina, J.C., Subsurface $CO_2$ Leakage: Lab-Scale Study of Salient Characteristics and Assessment of Borehole-Based Detection Using Resistivity Tomography. 4th International Conference on Geotechnical and Geophysical Site Characterization (ISC'4). Porto de Galinhas, Pernambuco – Brazil, September 2012.

Santamarina, J.C. (2012). Energy Geotechnology, *Geo-Strata*, pp. 14-15.

Santamarina, J.C. and Hyodo, M. (2011). US-Japan Hydrate Meeting at Georgia Tech. Future Research, DOE Fire in the Ice, vol. 10, n. 3, pp. 26-27.

Waite, W.F., J.C. Santamarina, M. Rydzy, S.H. Chong, J.L.H. Grozic, K. Hester, J. Howard, T.J. Kneafsey, J.Y. Lee, S. Nakagawa, J. Priest, E. Rees, C. Koh, E.D. Sloan, A. Sultaniya (2011). Inter-Laboratory Comparison of Wave Velocity Measurements in a Sand Under Hydrate-Bearing and Other Set Conditions, *Proc. 7th International Conference on Gas Hydrates (ICGH 2011). Edinburgh, Scotland, United Kingdom, July 17-21, 2011.*

D.Bakun-Mazor, Y.H. Hatzor, S.D. Glaser, J.C. Santamarina, Climatic effects on key-block motion: evidence from the rock slopes of Masada world heritage site. ARMA 2011.

Santamarina, J.C. (2010). Research, Teaching & Practice in Geo-Engineering Development Is the Past a Prologue to the Future?, Notes and slides, compiled by J. K. Mitchel, ASCE Geo-Institute Conference, Florida.

Kwon, T., Cho, G.C., Santamarina, J.C., Kim, J., and Lee, J. (2009). Stability evaluation of hydrate-bearing sediments during thermally-driven hydrate dissociation, AGU Fall meeting, Abstract.

Charalampidou E.M., Hall S., Stanchits S., Lewis H., Viggiani G. Santamarina J.C. (2009). Study of compaction bands in porous sandstones by means of non-destructive and destructive techniques, 8th Euro Conference of Rock Physics & Geomechanics, Ascona, Switzerland (Extended Abstract).

Santamarina, J.C. and Shin, H. (2009). Discontinuities in granular materials: Particle-level mechanisms, in Symposium on the Mechanics of Natural Solids, Horto, Greece, Eds. D. Kolymbas and C. Viggiani.

Cartwright, J., Santamarina J.C., Shin, H. (2009). A diagenetic mechanism for the formation of shear fractures in shales hosting deep tight gas plays, AAAG meeting, June – Denver.

Santamarina, J.C. and Jang, J. (2009). Gas Production from Hydrate Bearing Sediments: Geomechanical Implications, DOE Fire in the Ice, vol. 9, no.4, pp. 18-22.

Park KP, Bahk JJ, Holland M, Yun TS, Schultheiss PJ, Santamarina C (2009). Improved Pressure Core Analysis Provides Detailed Look at Korean Cores, Fire in the Ice, DOE.

Rinaldi, V.A. Adami, A., Bordese, B. and Santamarina, C (2008). Comportamiento Esfuerzo-Deformación del Loess: Efectos de Muestreo, Proc. Argentinean Geotechnical Congress, La Plata.

Claria, J.J. and Santamarina, J.C. (2008). Interfacial Friction and Vibration, Proc. Symposium on Characterization and Behavior of Interfaces, D. Frost Ed., Atlanta, September.

Santamarina, J.C. (2008). The 100 Watt Light Bulb Analogy, Proc. Progressive Dialogue II: Demand Drivers for Sustainable Energy Solutions, Council on Competitiveness, Chantilly, VA, March, page 42 (short essay).

Santamarina, J.C. and Narsilio, G.A. (2008). Clasificación de suelos: Fundamento Físico, Prácticas Actuales y Recomendaciones, Proc. 50th Anniversary Conference, Venezuelan Geotechnical Society (same article previously published in proceedings of Argentinean and Mexican conferences).

Kim, HK. and Santamarina, J.C. (2008). Spatial Heterogeneity Effects Under Ko Loading Conditions, IS-Atlanta 2008.

Rinaldi, V.A. and Santamarina, J.C. (2008). Cemented Soils: Small Strain Stiffness, Proc. Deformational Characteristics of Geomaterials, Millpress, vol. 1, pp. 267-273.

Santamarina, J.C. Ruppel, C., Lee, J.Y. and Yun, T.S. (2007). Making the Case for In Situ Characterization of Gas Hydrate-Bearing Sediments: Quantifying Degradation Associated with Core Retrieval (Extended Abstract).

Palomino, A. and Santamarina, J.C. (2008). Fine Grained Mineral Mixtures. Proc. ASCE, New Orleáns.

Santamarina J.C. and Shin H. (2007). Particle Dissolution: Ko Effects, IUTAM, Brazil 2007 (Extended Abstract).

Schultheiss, P., Santamarina, C., Kumar, K. and Collett, T. (2007). HYACINTH Pressure Cores from India: Analysis and Subsampling Reveals Detailed Methane Hydrate Structures, Fire in the Ice, DOE.

Kim, H.K., Narsilio, G. and Santamarina, J.C., (2007). Emergent Phenomena in Spatially Varying Soils, Proc. ASCE - Denver.

Santamarina, J.C. (2006). Comentarios sobre la UNC. Revista UNC.

Waite, W.F., Kneafsey, T.J., Santamarina, J.C., Winters, W.J., Yun, TS, Mason, D.H., Ruppel, C. (2006). Physical property changes in hydrate-bearing sediment samples due to depressurization/repressurization, AGU Fall meeting, Abstract.

S.J. Brandenberg, S.J., Choi, S. Kutter, B.L., Wilson, D.W. and Santamarina, J.C. (2006). A bender element system for measuring shear wave velocities in centrifuge models, in Physical Modelling in Geotechnnics, 6th ICPMG, Ng, Zhang and Wang (Eds). pp. 165-170.

Kim, H.K., Santamarina, J.C., (2006). Spatial variability effects on strength and stiffness, Proc. ASCE Geotechnical Engineering in the Information Technology.

Kim, H.K. Santamarina, J.C., (2006). Footprints: The Role of Particle Characteristics, Earth & Space Conference, Houston.

Yun, T.S., Narsilio, G.A., Lee, J.Y. Santamarina, J.C. and Ruppel, C. (2005). Physical Properties of a Keathley Canyon Pressure Core Maintained at In Situ Pressure - New Instrumented High Pressure Chamber, AGU Fall meeting, Abstract.

Santamarina J.C., Yun T.S., Lee J.Y., Martin A., Francisca F. and Ruppel C. (2005). Mechanical, Thermal and Electromagnetic Properties of Hydrate-Bearing Clay, Silt and Sand at Various Confining Pressures, AGU Fall meeting, Abstract.

Lee, J.S., Santamarina, J.C., Li, Z. and Kutter, B.L. (2005). Geophysical Process Monitoring in Scaled Models, 16th International Conference on Soil Mechanics and Geotechnical Engineering, Osaka, Japan.

Fratta, D. and Santamarina, J.C. (2005). Strains Due to Coupled Phenomena – Particle-level Analyses, 3rd Biot Conference on Poromechanics, Norman, Oklahoma, May.

Li, Z., Kutter, B.L., Wilson, D.W., Sprott, K., Lee, J.S. and Santamarina, J.C. (2005). Needle Probe Application for High-Resolution Assessment of Soil Spatial Variability in the Centrifuge, Frontiers, ASCE Geotechnical Conference, Texas.

Santamarina, J.C., Francisca, F., Yun, T.S., Lee, J.Y., Martin, A.I. and Ruppel, C. (2004). Mechanical, Thermal and Electrical Properties of Hydrate-Bearing Sediments, AAPG Hedberg Conference on Gas Hydrates: Energy Resource Potential and Associated Geologic Hazards, September, Vancouver, BC, Canada (Extended Abstract).

Wilson, D.W, Boulanger, R.W., Feng, X., Hamann, B., Jeremic, B., Kutter, B.l., Ma, K.l., Santamarina, C., Sprott, K.S., Velinsky, S.A., Weber, G., Yoo, S.J.B. (2004). The NEES Geotechnical Centrifuge At UC Davis, 13th World Conference on Earthquake Engineering, August, Vancouver, B.C., Canada, Paper No. 2497

Lee, J.S., Cho, G.C. and Santamarina, J.C. (2004). Liquefaction: Strength and Wave-based Monitoring, US-Japan Workshop, MIT, 12 pages.

Santamarina, J.C., Valdes, J.R., Palomino, A., Alvarellos, J. (2004). Viscous Effects in Particulates, IUTAM Proc. Physicochemical and Electromechanical Interactions in Porous Media, Ed. J. Huyghe, P.A.C. Raats and S.C. Cowin, Kluwer Academic Publishers, Boston, pp. 45-52.

Valdes, J.R. and Santamarina, J.C. (2003). Bio-Inspired Filters, 16th ASCE Engineering Mechanics Conference, Seattle, July (Extended Abstract).

Dijk, P. E.; Chang, H. Germanovich, L. N., and Santamarina, J. C. (2003). Experiments on Hydraulic Fracturing in Weakly Cemented Sediments, American Geophysical Union, Fall Meeting 2003, abstract #H42F-1131

Santamarina, J.C. and Diaz-Rodriguez, A. (2003). Friction in Soils – Micro and Macroscale Observations, Pan-American Conference, Boston.

Cho, G.C. and Santamarina, J.C. (2003). The Omnipresence of Localization in Geomaterials, 3rd Deformation Characteristics of Geomaterials, Di Benedetto et al Eds., Lyon, pp. 465-473.

Fernandez, A., Gonzalez, M., Parra, S., Malave, G., Alvarellos, J. and Santamarina, J.C. (2002). Tomographic Imaging the Subsurface Beneath a Dam – Inferring the State of Stress, Canadian Dam Conference, Victoria.

DeGroot, D.J. and Santamarina, J.C. (2001). Discussion Session 1.1 – Assessment of deformation properties including time and rate effects, Proc. XVth ICSMGE, Turkey, vol. 4, pp. 2701-2702.

Santamarina, J.C., Fratta, D. and Klein, K. (2001). About Writing Books (Panel Member – Notes can be found at http://www.ce.gatech.edu/~carlos/).

Rinaldi, V. Claria, J. and Santamarina, J.C. (2001). The small-strain shear modulus (Gmax) of Argentinean loess, Proc. XVth ICSMFE, Turkey, vol. 1, pp. 495-498.

Fratta, D., Fernandez, A. L. and Santamarina, J.C. (2000). Geo-materials: Non-destructive Evaluation in Geosystems. Review of Progress in QNDE, D.O. Thompson and D. E. Chimenti Eds., American Institute of Physics, vol. 20, pp. 1048-1055.

Francisca, F. M. Rinaldi, V. A., Santamarina, J.C. (2000). Detección de Hidrocarburos Mediante Geo-radar, Proc. Congreso Argentino de Mecanica de Suelos, Cordoba, November, 8 pages.

Santamarina, J.C. and Fernandez, A.L. (1999). Tomographic imaging soil-tunnel interaction, ASCE-GI Conference, Urbana, pp. 294-302.

Santamarina, J.C. and Fratta, D., Fernadez, A. (1998). Metodos Geofisicos en la Geotecnia de Superficie, Proceedings of the Argentinean Geotechnical Conference, October, pp. IV.1-IV.22.

Santamarina, J.C., Fam, M., Fratta, D. and Cascante, G. (1998). Solid-Fluid Coupling Phenomena in

Particulate Media, Biot Conference in Poromechanics Belgium, September 1998.

Rinaldi, V.A., Santamarina, J.C. and Redolfi, E.R. (1998). Characterization of Collapsible Soils with Combined Geophysical and Penetration Testing, Proc. First Int. Conf. on Site Characterization ISC'98, Atlanta, 19-22 April 1998. pp. 581-588.

Santamarina, J.C. and Klein, K. (1997). Electromagnetic Properties of Soils, Electrically Based Microstructural Characterization II, Proc. 1997 Materials Res. Society, Warrendale, PA, pp. 137-145.

Rinaldi V., Redolfi E. and Santamarina J.C. (1997). Propiedades Dielectricas del Loess y su Influencia en las Mediciones con Georradar, Encuentro de Geotecnicos Argentinos GT97, Córdoba, Argentina vol 1. Cap. IV. 7. pp. 1-15.

Dusseault, M.B., Davidson, B.C. and Santamarina, J.C. (1996). Potential for salt solution cavern placement of engineered radioactive wastes. Proc. Int. Conf on Deep Geological Disposal of Radioactive Waste, Winnipeg. Canadian Nuclear Society, Toronto, pp. 6-31 to 6-40.

Santamarina, J.C. and Fratta, D. (1996). Image Processing in Blast Fragmentation: Transfer Function and Invertibility, Fragmentation Measurement, Edited by J. Franklin, A. Rustan and T. Katsabanis, Balkema, Rotterdam, 121-125.

Santamarina, J.C., Fam, M. and Cascante, G. (1995). Study of Particulate Materials and Process Monitoring with Mechanical and Electromagnetic Waves, Proc. Canada-Mexico Workshop on Applications of the Physics of Porous Media, Puerto Vallarta.

Santamarina, C. and Gheshlaghi, F. (1995). Tomographic Imaging: Potentials and Limitations, Proc. Non-Destructive Eval. of Aging Structures and Dams, SPIE Conference, vol. SPIE-2457, pp. 67-78.

Santamarina, C. and Fratta, D. (1995). Electromagnetic Emissions in Geomaterials, ASCE Symposium on Recent Developments in Electromagneto-Mechanics, 10th ASCE Engineering Mechanics Specialty Conference, Boulder, May (Abstract).

Santamarina, C. and Akhoundi, K. (1995). Teaching Creativity, Invited Position Paper, ASCE Education Conference-1995, Ed. J.T.P Yao (Extended Abstract).

Gheshlaghi, F., Santamarina, C., Wiese, D., Thomas, M., Polak, M. and Caratin, G. (1995). Tomographic Imaging Concrete Structures, Proc. Int. Symposium on Non-Destructive Testing in Civil Engineering (NDT-CE). eds. G. Schickert, H. Wiggenhauser, September, vol. 1 pp. 297-304.

Franklin, J., Maerz, N.H. and Santamarina, J.C. (1995). Developments in Blast Fragmentation Measurement, Proc. 21 Ann. Conf. Explosives and Blasting Tech., Nashville Tennessee, Feb. 5-9.

Santamarina, J.C and Fam, M. (1994). Assessing and Monitoring the Geo-Environment, in Geoenvironmental Issues Facing the Americas, Proc. of NSF Workshop, Ed. E. Macari, Puerto Rico.

Dusseault, M.B., Santamarina, J.C., Trentaseaux, C., Lebon, P. and Alonso E.E. (1994). Granular Halite Creep and Compaction for Backfilling, First International Conf. on Environmental Geotechnology, Edmonton, pp. 855-860.

Santamarina, J.C. and Tallin, A. (1993). Image Enhancement in Geotomography, Proc. Conference Digital Image Processing Techniques and Application in Civil Engineering, Kona-Hawaii, Ed. D. Frost and J. Wright, Pub. ASCE, pp. 246-254.

Fam, M. and Santamarina, J.C. (1993). Interaction of Electromagnetic and Mechanical Waves with Clays, NSF Workshop on Geophysical Techniques, Atlanta, June 11 and 12. pp. 61-64.

Cascante, G., Santamarina, J.C. and Yassir, N. (1993). Wave-Based Characterization of Overpressured Zones, NSF Workshop on Geophysical Techniques for Site and Material Characterization, Atlanta, June 11 and 12, pp. 135-138.

Aloufi, M.A., Huynh, N.T. and Santamarina, J.C. (1993). Mechanical Waves Through Discrete Media, NSF Workshop on Geophysical Techniques for Site and Material Characterization, Atlanta, June 11 and 12, pp. 107-112.

Santamarina, J.C. (1992). Imaging The State of Stress in Particulate Media, 29th Meeting Society of

Engineering Science (Refereed Abstract).

Santamarina, C. (1992). Wave Geomedia Interaction and Applications, Proc. National Science Foundation Structures Geomechanics and Building Systems Grantees Conference, Puerto Rico, June, pp. 35-37.

Rinaldi, V.A. and Santamarina, J.C. (1992). Corrosion in Geotechnical Media: The Potential Use of Electromagnetic Waves, 45th Canadian Geotechnical Conference.

Cesare, M., Santamarina, J.C., Turkstra, C. and Vanmarcke, E. (1991). Probabilistic Methods in Bridge Management, ASCE 2nd Civil Engineering Automation Conference, New York, pp. 46-55.

Akhoundi, K.A. and Santamarina, J.C. (1991). Creativity and Water Resources: Theory and Stimulation, 18th National Water Resources Conference, New Orleans. Theme paper.

Santamarina, J.C. (1991). Imaging with Uncertain Data Using Fuzzy Constraints, EOS – Transactions American Geophysical Union, April 23 Issue, page 194.

Santamarina, J.C. and Akhoundi, K. (1990). Fuzzy Sets Based Computer Aided Creativity, Proc. International Symposium on Uncertainty Modeling and Analysis, Maryland.

Akhoundi, K. and Santamarina, J.C. (1990). Creativity in Design: The Example Of E. Torroja, Proc. Eighth Structures Conference, Baltimore.

Santamarina, J.C. and Tallin, A.G. (1990). Comments to the article by A. Witten and W. C. King Sounding Out Buried Waste, Civil Engineering, October, page 26.

Tallin, A.G. and Santamarina, J.C. (1989). Geotomographic Site Investigation Software, Proc. 7th National Conference on Microcomputers in Civil Engineering, Orlando, pp. 219-222.

Santamarina, J.C. and Leonards, G.A. (1989). Stability Analysis with Non-Rigid Wedges, Proc. International Symposium on Landslides, August, Colombia.

Akhoundi, K. and Santamarina, J.C. (1989). Support System for Creativity, HCI International '89.

Santamarina, J.C., Reginatto, A. (1989). Prediction of Pile Capacity, Predicted and Observed Axial Behavior of Piles, R.J. Finno ed., ASCE Geotechnical Special Publication 23, pp. 258-269.

Santamarina, J.C. and Alarcon, A. (1988). Settlement in Sands- The Role of In Situ Tests, Proc. of the Argentinean Congress on Soil Mechanics and Foundation Engineering, September, Argentina.

Alarcon, A. and Santamarina, J.C. (1988). Settlement of Shallow Foundations on Granular Soils, Memorias V Jornadas Geotecnicas, Sociedad Colombiana de Ingenieros, Oct. 19 to 21, Bogota (This paper complements the following publication, with emphasis on soil behavior).

Santamarina, J.C. and Frost, D. (1988). Comments to the article by J. H. Schmertmann, Dilatometers Settle In, Civil Engineering, June, pg. 28 (Figure not published).

Santamarina, J.C. and Rinaldi, V. (1986). Index Maps: Systematizing the Geotechnical Information in Argentina, Proc. of the Argentinean Congress on Soil Mech. and Found. Eng., September 22-26.

Chameau, J.L. and Santamarina, J.C. (1985). Fuzzy Sets in Earthquake Engineering, International Symposium on Fuzzy Mathematics in Earthquake Research, Beijing, China. (Refereed Abstract.)

Chameau, J.L. and Santamarina, J.C. (1985). Fuzzy Sets in Geotechnical Engineering at Purdue U., Proc. of the Workshop on Civil Eng. App. of Fuzzy Sets, Purdue U., October 17-19.

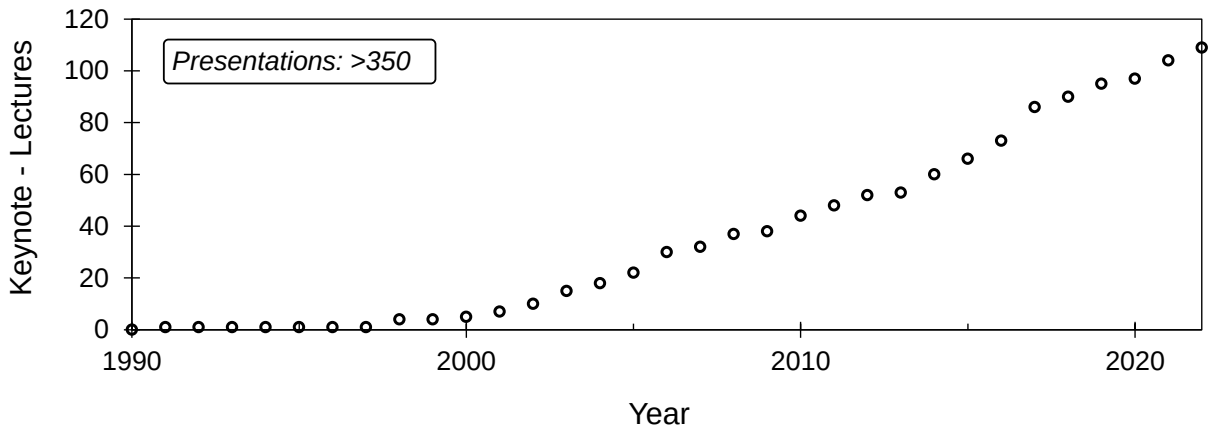
## E. OTHER PUBLICATIONS: NEWSLETTER ON CREATIVE THINKING

"MetaStates, The newsletter on Creative Thinking" (January 1990 through December 1992 – Circulation: 350 technical readers in 25 different countries.

Technical Themes authored by Santamarina:

- Rationalism. When Creativity Becomes Self-serving (1990).
- Systematic Organization of Information, and Cognitive Browsing (with Akhoundi, K., 1990).
- Strategies for Discovering (1990).
- Creativity in Design: E. Torroja (with Akhoundi, K., 1990).
- Causality, Uncertainty. Randomness (1990).
- Impulsive Subliminal Symbiosis (with Akhoundi, K., 1990)
- Computers and Creativity (1990).
- Creativity - Our View (with Akhoundi, K., 1990).
- Creativity and Age (with Akhoundi, K., 1991).
- Brief History of AI (1991).
- Cartoons and Creativity (1991).
- Computerized Cognitive Browsing Based on Fuzzy Sets (with Akhoundi, K., 1991).
- Questionnaire Results (with Akhoundi, K., 1991).
- Environment and Creativity (1991)
- Creativity in Engineering - Summary of Findings (with Akhoundi, K., 1991).

## VII. OTHER SCHOLARLY ACCOMPLISHMENTS




**A. PRESENTATIONS** (*Some are cross-listed under Named Lectures, within Honors and Awards)*

*Keynote Addresses - Plenary Lectures – Invited Speaker*

- Bases and Subbases Subjected to Multi-physics Repetitive Loads. 7th International Symposium on Transportation Soil Engineering in Cold Regions, September 2025, South Korea..
- Soil Properties: Casagrande's Prologue to the Future (Insights from Deep Water). Panamerican Conference, Chile, November 2024.
- The Energy-Climate-Livability Challenge: New Roles for the Earthquake Engineering Community, 6th Kenji Ishihara Colloquium Series on Geotechnical Earthquake Engineering, September 2024
- Energy Geotechnics, GeoCongress 2024, Vancouver, February 2024.
- Climate Change Effects in Geotech, GeoCongress 2024, Vancouver, February 2024.
- 75th Géotechnoque Anniversary, London, October 2023.
- Soil Behavior and Properties – Recent Developments, GeoVirginia 2023 Conference, Smithfield, Virginia - October 2023.
- Energy Geotechnics: Fluids, EPFL, Lausanne, October 2023.
- Multiphysics Sediment Characterization and Process Monitoring, 14th International ISEMA Conference, Brisbane, Australia, September 2023.
- InterPore2023 Conference, Natural and Engineered Geosystems Subjected to Multi-physics Repetitive Loads, Edinburgh, May 2023.
- InterPore, Perth, Australia, September 2022.
- Bio-Inspired & Bio-mediated GeoEngineering, Third International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering (EGRWSE-2022), Izmir, Turkey, September 2022.
- Energy Geoengineering: In need of Robust Numerical Tools, 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics IACMAG, Torino, Italy August 2022.
- State of the Art: Energy Geotechnics, 20th ISSMGE, Sidney May 2022.
- Bishop Lecture: The Assessment of Geotechnical Properties in the Information Age, 20th ISSMGE, Sydney, May 2022.

- ISSMGE Energy Geotechnics Honour Lecture, 2nd International Conference on Energy Geotechnics. La Jolla, California, USA, April 2022.
- Sixth International Conference on Engineering Geophysics ICEG2021, Al-Ain, October 2021.
- Energy-Climate-Livability: Geotech in Changing Times, International Society Soil Mechanics and Geotechnical Engineering ISSMGE, under "Future or Geotechnics" YMPG, October 2021.
- Energy-Climate-Livability: Geotech in Changing Times, Future-shaping Architecture, Civil, and Environment Congress, Korea, August 2021.
- Geotecnia en Tiempos de Cambios, Sociedad Chilena de Geotecnia, August 2021.
- The Role of Granular Materials in the Energy Challenge, Powders and Grains, Buenos Aires, July 2021.
- Couplings During Repetitive Environmental Loadings, GEOMECH IRN: Couplings in Environmental Geomechanics, July 2021.
- Soils and Aggregates: Recent Developments and Implications (*Geotechnical Research and Applications to Transportation*). TRB January 2021.
- The World after the Coronavirus, Strategic National Advancement, Asbar World Forum (April 9th, 2020 – Speaker and Panelist).
- Engineering Education towards Creative Problem Solving, MENA Regional Engineering Eucation Conference, Dubai March 2020.
- Geotechnical Education – Panamerican Conference – Cancun November 2019 (Panel Member).
- Multiphysics Sediment characterization and process monitoring. Fifth International Conference on Engineering Geophysics ICEG2019, Al-Ain, UAE, October 2019.
- Create to Become, King Abdulaziz Centre for World Culture, ITHRA (= Enrichment). Dammam, October 2019. https://www.youtube.com/watch?v=Kvdakz9dftE
- Physics-inspired Geotechnical Engineering, Workshop in Honor of Prof. E. Alonso, Barcelona, May 2019.
- Geotech Discipline Overview of Perspectives, 1st International Workshop on Bio-Inspired Geotechnics, May 2019 – Monterrey CA.
- Repetitive Loading, Geo-Middle East, Giza, November 2018.
- Energy Geotech: Fractured Rock, Symposium on Energy Geotechnics (SEG-2018), Lausanne, September 2018.
- Bio-mediated and Bio-inspired Geotech, B2G Symposium, September 2018.
- Repetitive Loading (ISSMGE TC 105 - IS-Atlanta-2018), Atlanta, September 2018.
- ASBAR World Forum, Creativity and Innovation - From Global Drivers to Personal Traits, Riyadh November 2017.
- 8th CIAP-WDRC at KAUST, Towards a Sustainable Energy System (H20-Compatible), November 2017, Saudi Arabia.
- 4$^{th}$ SEG International Conference on Engineering Geophysics, October 9-12 2017, Al Ain, UAE.
- Critical State, 28$^{th}$ ALERT Geomaterials, Alliance of Laboratories in Europe for Education, Research and Technology, France October 2017.
- Energy GeoEngineering, Seoul, South Korea, September 2017.
- Geotechnical engineering education, ICSMFE - TC306, South Korea, September 2017.
- Biot Conference – Tribute to Olivier Coussy, 9-13 July, 2017, Paris.
- Sediment Properties, Terzaghi Lecturer Series, International Symposium of Coastal and Offshore Geotechnics ISCOG, China, July 2017.
- Energy Geoengineering: Wells, International Conference of Geo-Energy and Geo-Environment, China,

July 2017.

- Deep Foundation Concepts in Energy GeoEngineering, International Congress in Foundation Engineering, Bolivia, April 2017.
- Energy GeoScience and Engineering, Masri Institute Workshop, American University of Beirut, April 2017.
- Soil & Sediments - Phenomena, Seoul, South Korea, March 2017.
- Soil Properties Revisited: From Particle and Pore-Scale Processes to Macroscale Implications, International Conf. Advances in Structural and Geotechnical Engineering, Hurghada, Egypt, March 2017
- "100 years of Geotechnical Engineering: Soil Properties Revisited", 16th National Conference of SMGE, Erzurum Turkey, October 2016.
- Geophysical characterization, ISC'5, Gold Coast, Australia September 2016.
- The Energy Tera Problem: Needed Geo-centered Solutions, 1st International Conference on Energy Geotechnics - ICEG 2016, Kiel, August 2016.
- Dissolution and Precipitation: Implications, 4th International Workshop on Modern Trends in Geomechanics (IW-MTG4), Assisi, May 2016.
- "100 years of Experimental Geomechanics: New Directions", International Conference in Honor of Carlo Viggiani, University of Napoli Federico II, February 2016.
- Soil Properties and Ground Improvement, Conference on "Difficult Soils and Ground Improvement", Sultan Qaboos University, Oman, February 2016.
- Energy Resources, Use, Conservation & Efficiency – Pending questions. Emirates Energy Efficiency Summit, Dubai, Feb 3&4, 2016.
- "Energy Geo-Engineering: Storage", International Conference on Geo-Energy and Geo-Environment between 5th and 6th December 2015 (GeGe2015), Institute for Advanced Study, Hong Kong.
- Soil and Rock Properties – Preamble, 15th Pan-American Conference on Soil Mechanics and Geotechnical Engineering, Buenos Aires (November 2015).
- Terzaghi Lecture (encore), 12th Chinese National Conference on Soil Mechanics and Geotechnical Engineering, Shanghai, China (July 2015).
- Methane hydrates, International Symposium on Energy Geotechnics Barcelona (June 2015)
- Unsaturated soil behavior, ALERT, Barcelona (May 2015)
- Soil behavior: particle/pore scale processes and macroscale implications, 23rd Prague Geotechnical Lecture, (May 2015).
- Pressure Core Technology, AGU San Francisco (December 2014)
- Geotecnia y Energía: Avanzando el entendimiento de los suelos, Chile Geotechnical Conference (November 2014)
- Energy Geotechnology: Enabling New Insights Into Soil Behavior, Kansas Geotechnical Conference (November 2014)
- Ingenio...Ingeniero: Geotecnia y creatividad, IV Conferencia Sudamericana de Ingenieros Geotécnicos Jóvenes, Colombia (October 2014).
- Geotecnia y Energía: Avanzando el entendimiento de los suelos. XIV Congreso Colombiano de Geotecnia, Bogotá (October 2014).
- Gordon Research Conference, Granular Materials, Particulars of the Particulate (Unexpected phenomena in granular materials and engineering implications), Stonehill College, Easton, MA (July 2014).
- Terzaghi Lecture, Energy Geotechnology: Enabling New Insights Into Soil Behavior, Atlanta (February 2014). https://www.youtube.com/watch?v=YQGdw_-mOyc
- Experimental Micromechanics for Geomaterials, Hong Kong (May 2013).

- Mixed Fluid Conditions in Energy Geotechnology, Second DFG Workshop, Karlsruhe Institute of Technology, Germany (2012).
- Geotecnia y Biomimetización: Raíces, hormigas y horneros, Ministerio de Ciencia, Tecnología e Innovación, Buenos Aires (November 2012).
- Geophysical Characterization, Conference of the European Association ALERT-Geomaterials, Aussois, France (October 2012).
- Energy geotechnology, International Conference on Geomechanics & Engineering ICGE12, Seoul, Korea (August 2012).
- Geophysical Characterization, Panamerican Conference, Toronto (October 2011).
- On the Physics of Geomaterials at Small Scale, Conference of the European Association ALERT-Geomaterials, *Université Joseph Fourier*, Grenoble (June 2011).
- Pores and Grains: Complementary Opposites, Coussy Memorial, Paris, France (April 2011).
- Soil phenomena at the particle/pore scale, 2nd International Workshop on Characterization of Materials with Inherent Micros Structure, Bochum, Germany (March 2011).
- 2010 Tewkesbury Lecturer, U. Melbourne, Australia (December 2010).
- Los Materiales Granulares y Las Estructuras de Pavimentos, Congreso Nacional de Pavimentos, Margarita, Venezuela, September 2010.
- Aspectos Fundamentales del Comportamiento de los Suelos - Nuevos Conocimientos (Fundamentals of soil Behavior – New Concepts), Congreso Nacional, Mendoza, Argentina, Octubre 2010.
- New Directions in Unsaturated Soils: Energy Geotechnology, Int. Conf. Unsaturated Soils, Barcelona, September 2010.
- Emergent Phenomena in Energy Geotechnology, Workshop on Multiscale & Multiphysics Processes in Geomechanics, Stanford University, June 2010.
- Gordon Research Conference, Natural Gas Hydrate Systems, Colby College, Waterville, ME, June 2010.
- Una Nueva Generacion de Ingenieros Civiles: Enfrentando Desafios sin Precedentes, Congreso Nacional de Estudiantes de Ing. Civil, Argentina, October 2009.
- Soil Characterization, 50th Anniversary, Nat. Geotech. Conf., Caracas, Venezuela, November 2008.
- Energy and Geotechnology. 12th IACMAG Conference, Goa, India, October 2008.
- The Geophysical Properties of Soils, The 3$^{rd}$ Int. Conf. Soil Characterization, Taiwan April 2008.
- Bio-Chemo-Thermo-Mechanical Properties of Near-Surface Soils -A Particle-level Analysis-. ARO Disturbed Soil, Atlanta, January 2008.
- Bio-mediated processes in soils, TRB, January 2008.
- Energy: A Geocentered Perspective, Strategic Energy Institute, Georgia Tech, Atlanta, October 2007.
- Geotechnical Aspects of Energy, National Conference on the Advancement of Research, Savannah, April 2007.
- Geotecnia y Energía, Academia Nacional de Ingeniería, Argentina, November 2006.
- Ingenio… Ingeniería – Desafíos y Oportunidades. U. Nacional de Córdoba, November 2006.
- Ingenuity …. Engineering. The role of creativity in addressing today's engineering challenges. UPADI, September 2006.
- Challenges, Potential and Future of TDR, TDR conference, Purdue U., September 2006.
- Particulate Media Characterization and Process Monitoring with Elastic and Electromagnetic Waves, IS-Yamaguchi, Japan, September 2006.
- New Technology for Soil Characterization in the Laboratory, IS-Hong Kong, June 2006.
- Micro-scale processes in soil behavior, Geo-Shanghai Int. Conf., Shanghai, China, June 2006.

- Geotechnology: Paradigm Shifts in the Information Age, ASCE Geo-Congress, February 2006.
- Challenges and Opportunities in Geotechnology, W(Y)DOC2005, ENPC-Paris, November 2005.
- Creatividad, Ingenio… Ingeniería !, Jornadas de Ingeniería Civil, Morelia, Mexico, October 2005.
- Ingenio… Ingeniería – Desafíos y Oportunidades, Congreso Nac. Ing. Civil, Querétaro, México, August 2005.
- Creatividad en la Ingeniería, X International Symposium on Civil Engineering, ITESO, Guadalajara, Jalisco, México, April 2005.
- 18th Symp. Application of Geophysics to Eng. and Environmental Problems, Atlanta, April 2005.
- Conferencia Nacional de Mecánica de Suelos, Guadalajara, México, November 2004.
- Geo2004: Advances In Geotechnical Engineering, Irbid, Jordan, July 2004.
- Materiales Granulares Diseñados, Induction Lecture, Acad. Nac. Ciencias, Argentina, April 2004.
- Research Directions in Geotechnical Engineering, USUGER Workshop, Atlanta, October 2003.
- Integrated Soil Behavior, 3rd International Conference on the Deformation Characteristics of Geomaterials, Lyon, September 2003.
- Micro and macroscale soil behavior in the near surface, US Army Workshop on Soil Physics, Santa Fe, August 2003.
- Creativity in Engineering Education, Int. Conf. Engineering Education, Texas A&M, February 2003.
- Fisica Medios Granulares, XXXII Meeting on Statistical Physics, Taxco, Mexico, January 2003.
- Caracterización Geofísica de Suelos: Desarrollos Recientes, IV Seminario Nacional de Geotecnia, Colombia, November 2002.
- Aspectos Fundamentales del Comportamiento de Suelos: Saturación y Cementación, IX Congreso Nacional de Geotecnia, Colombia, November 2002.
- Modern Methods in Geotechnical Investigation, International Symposium on Geotechnical Engineering and Hi-Technology, Yamaguchi U., Japan, July 2002.
- Aspectos fundamentales del comportamiento de los suelos, VI International Symposium on Civil Engineering, ITESO, Guadalajara, Jalisco, México 2001.
- Soil Behavior at the Microscale: Particle Forces, Soil Behavior and Soft Ground Construction, A symposium in honor of Charles C. Ladd Ladd Symposium, MIT 2001.
- Seismic-Wave-Based Testing in Geotechnical Engineering, International Conference on Geological and Geotechnical Engineering, Melbourne, November 2000 - with Ken Stokoe.
- Near Surface Geophysical Methods, Argentinean Geotechnical Conference, Cordoba, October 1998.
- Geophysical Techniques to Measure Soil Properties, ASCE Congress '98, Boston 1998.
- Mineral Fines, NSA Workshop, Atlanta, November 1998.
- Wave-based Technology in Geotechnical Engineering, Geotechnical Engineering Conference, Cairo, Egypt, October 1991.

*Invited Speaker (Professional Societies, Universities, International Workshops)*

- Beneath the Waves? The Fascinating Seafloor! Insights into Offshore Geotechnics. ASCE GeoInstitute, Georgia Chapter, Spring 2025.
- Geofisica para ingenieros geotécnicos – Soluciones practicas, August 21 2024 (online from Chile to the geotechnical community in Latin America). (https://masgeotecnia.mykajabi.com)
- Soil characterization and Classification, Universidad Nacional de Lima, Peru, May 2024.
- Multi(geo)physics Sediment Characterization and Process Monitoring, U. Washington, May 2024.

- Energy GeoScience and Engineering, International Webinar Series on Geoenvironmental Engineering, Sustainability and Resiliency, University of Illinois Chicago, February 22, 2024.
- Georgia Tech Cutting Edge Technologies, February 1, 2024.
- Understanding Multi-Physics Repetitive Loads: From Biology to Geotechnical Engineering and Resource Recovery, University of Alberta, January 2024.
- Materials Subjected to Multi-physics Repetitive Loads, Material Science and Engineering, Georgia Tech, November 2023.
- The Energy Challenge: The Role of Geotechnical Engineers, University of New Hampshire, October 2023.
- Multi-physics Repetitive Loads, University of Texas - Austin, October 2023.
- Transformation in Urban Underground Infrastructure - Energy-centered Perspective, NSF-UKRI Workshop, Washington September 2023.
- Energy and Circular Carbon Economy, KAPSARC, Saudi Arabia May 2022.
- Experimental Methods in Research, ERSE-ERPE Seminar Series, KAUST, March 2020.
- Repetitive Loads in Geotechnical Engineering, Distinguished Lecture Series, U.C. Berkeley, May 2022.
- Particulars of the particulate: From natural soils to industrial residues, South Africa, SAICE GeoDiv Evening Lectures for 2022.
- Higher Education: Why? How? What?, KAUST-KSU Senior Executive Leadership Program, February 2022.
- 'There is plenty of room'… in clays!, Clay Micromechanics 2022, Milan January 2022.
- Energy Geo-Science and Engineering, Georgia Institute of Technology, 2022.
- Creativity in Engineering and Science, Science Day, LMGC, U. Montpellier, December 2021.
- Seafloor Geotech: Properties, Processes and Characterization, Géosciences, U. Montpellier, October 2021.
- Energy Geo-Science and Engineering: Fractured Rocks, Sediments and Complex Fluids, University of Waterloo, October 2021.
- Natural and Engineered Geosystems Subjected to Repetitive Multi-physics Loads, Canadian Geotechnical Society, Toronto, October 2021.
- Energy: A Geo-Centered Perspective, University College Dublin and Zhejiang University, October 2021.
- Bio-mediated and Bio-inspired Geo-Engineering, University of Illinois at Chicago, September 2021. https://youtu.be/NrRyMUIkp8c.
- Granular Materials in Energy Geoengineering: Phenomena: Particle- and Pore-scale Phenomena, Workshop at U. Montpellier, September 2021.
- Agua (suelos y rocas), Universidad de Chile, Julio 2021. www.youtube.com/watch?v=WCS2-9iZI0I&t=343s
- Cargas Repetitivas (mecánicas y ambientales), CEDEX, Madrid, June 2021.
- Sand mining, Northwestern University, June 2021.
- Creativity: Bio-Inspired Geo-Solutions. NSF Center for Bioinspired Biomediated Geotech, April 2021.
- Repetitive Loads (Multiphysics), ERSE-ERPE Seminar Series, KAUST, March 2020.
- Hydrate Bearing Sediments – Properties and Implications, China University of Geosciences, National University in Wuhan, China, December 2020.
- Around the world in 100 years: our geotechnical journey (towards the understanding of geomaterials), University of Waterloo and Canadian Geotechnical society, December 2020.

- Energy Geo-Science and Engineering: Scaling Laws, in Frontiers for Hypergravity Experiments and Model Tests, organized by University of California at Davis and the International Conference for Soil Mechanics and Geotechnical Engineering (ISSMGE) Technical Committee 104 (Physical Modeling in Geotechnics).
- Fractured Rocks: Genesis, Processes and Properties, Universite Grenoble, December 2020.
- Rocas Fracturadas: Genesis, Procesos y Propiedades, UPC, October 2020.
- Fractured Rocks – Genesis, Processes and Properties, Georgia Tech (U. Alberta, others), October 2020.
- Multiphase Fluids in Geomaterials - Pore-scale Phenomena and Implications, Organized by KAIST and Korea University – transmitted to 10 other universities, October 2020.
- Soil behavior and properties – From the particle/pore scale to the macro-scale, HKUST, October 2020.
- Imperial College, Multiphase Fluids in Geomaterials – Pore-scale Phenomena and Implications, September 2020.
- Carbon Geological Storage, Sustainability Seminar Series, KAUST, September 2020 (https://www.youtube.com/watch?v=aGtfxnGdJ-U)
- Soil Properties - Classification, Chile (online, 510 participants – geotechnical community in Latin America). September 2020 (https://masgeotecnia.mykajabi.com/blog/propiedadesdelossuelos)
- Creativity in Engineering and Science, ERSE/ERPE lecture series, KAUST, September 2020 (https://youtu.be/a_oH7YjL2gE)
- Soil Properties, Bolivian Geotechnical Society (online, more than 400 participants). August 2020.
- Geophysical Properties of Soils, Queensland, June 2020 (online: >450 participants, 61 different countries - https://drive.google.com/file/d/1zm1npHLlTb2fUUdGtePRqH2HY_26uT7f/view?usp=sharing )
- Water = $H_2O$ (let's imagine), ERSE-ERPE Seminar Series, KAUST, March 2020.
- Sediments, ERSE/ERPE lecture series, KAUST, February 2020.
- Seafloor Geotechnics, U. Granada, Spain, February 2020.
- Thermal Properties and Heat Recovery, Conference on Maturing Geothermal Energy for Saudi Arabia, KAUST, January 2020.
- Seafloor Geotechnics, Georgia Tech & CBBG Center (ASU, UC Davis, others), January 2020.
- The Role of Repetitive Loading in Nature, CBBG Center for Bioinspired and Biormediated Geotech (GT, UCDavis, UA, UNMx), January 2020.
- Create to Become. Jeddah Chamber of Commerce, November 2019.
- Clays: Implications in Geotechnical Engineering, MIT Workshop on Clays: New Perspectives, Challenges & Opportunities, USARO, May 2019.
- Dar Al-Hekma University, Distinguished Speaker Series, January 2019.
- Energy GeoEngineering, National Chiao Tung University NCTU, Taiwan, December 2018.
- Fractured Rocks in Energy GeoEngineering, Industrial Technology Research Institute, Taiwan, December 2018.
- Energy GeoEngineering, King Saud University KSU, November 2018.
- Convocation Speaker, KAUST, September 2018.
- Soil Structure: Enduring Memory, Imperial College, UK, March 2018.
- Mixed Fluids: From Unsaturated Soils To Fossil Fuels, Georgia Tech, January 2018.
- Towards a Creative Life, KGSP, Phoenix, January 2018
- The Energy Tera Problem: Geo-Science and Engineering Challenges, Istanbul University, November 2017.
- The Energy Tera Problem: Geo-Science and Engineering Challenges, Bogazici University, November

2017.

- Soil GeoPhysics, Boğaziçi Üniversitesi, Istanbul October 2016.
- Women and Creativity, Saudi Initiatives, KAUST, May 2016.
- Physics Inspired … Data Bound - NSF workshop, July 2016, Washington DC.
- Geo-Engineering: Vital and Fascinating (November 2015 – Doctor Honoris Causa, U. Nacional de Cordoba, Argentina).
- Academia in Changing Times (November 2015 – Doctor Honoris Causa, U. Nacional de Cordoba, Argentina).
- Terzaghi Lecture (encore), Texas A&M (November 2015).
- Bio-mediated and bio-inspired geoengineering, ERSE-ERPE Seminar Series, KAUST (October 2015).
- Terzaghi Lecture (encore), EPFL Lausanne (September 2015)
- Multiscale study of soils, Australia, Melbourne, (July 2015).
- Terzaghi Lecture (encore), Melbourne (July 2015)
- Bio-mediated and bio-inspired geotech, CEDEX, Madrid (June 2015).
- Sediment characterization with Elastic and Electromagnetic Waves, Workshop, KAUST (March 2015)
- Terzaghi Lecture (encore), Queens University (February 2015)
- Terzaghi Lecture (encore), Golder Associates – Toronto (February 2015)
- Terzaghi Lecture (encore), ASCE Atlanta (January 2015)
- Mathematical Problems in GeoEngineering, Oregon State University, Corvalis (October 2014)
- Terzaghi Lecture (encore), Oregon State University, Corvalis (October 2014)
- Terzaghi Lecture (encore), Pittsburg, ASCE Geotechnical Section (October 2014)
- Terzaghi Lecture (encore), University of Tennessee (September 2014)
- GeoEngineering – Next 10 years, KAUST, Saudi Arabia (September 2014)
- Pressure Core Characterization, KIGAM, S. Korea (July 2014)
- Terzaghi Lecture (encore), KAIST, S. Korea (July 2014)
- Terzaghi Lecture (encore), New Mexico State University, ASCE Geotechnical Section (May 2014)
- Process monitoring using small-strain measurements, Bristol University (March 2014)
- Energy: A Geo-Centered Perspective, University of Texas – Austin (October 2013)
- Energy Geotechnology, Aristotle University of Thessaloniki (September 2013)
- Energy Geotechnology, Greek Geotechnical Society – Athens, (September 2013)
- Macro-scale manifestations of some pore-and-particle scale processes, ICSMFE - Paris (September 2013)
- Energy Geotechnology, Hong Kong University of Science and Technology HKUST (May 2013)
- Energy Geotechnology, Georgia State University (April 2013)
- Desiccation cracks, Geo-Congress 2013 (February 2013)
- Properties of fly ash, ASCE Geo-Institute, GA Chapter (with R. Bachus, February 2013)
- Soil Phenomena - A particulate View, Karlsruhe Institute of Technology, Germany (2012).
- Unsaturated Soils, Universidad de Buenos Aires, Argentina (2012)
- British Geotechnical Association BGA Touring Lecture, “Energy Geotechnology: The Role of Geotechnical Engineers in the Energy Challenge” (November 2012).
    - University of Birmingham
    - Cardiff University

    - Imperial College
    - Queen's University Belfast
- Pore and Particle Scale Experiments, Series of two lectures at the ALERT School on Geomaterials, Aussois, France (5 hrs - October 2012)
- Carbon Geological Storage – Underlying Processes. KAIST, Daejeon, South Korea (August, 2012)
- Carbon Geological Storage – From a Geotechnical Engineering Perspective, Yonsei University, Seoul, South Korea (August 2012).
- TED Talk (Creative Coast 2012): Engineering Ingenuity (May 2012),
- Soil Phenomena at the Particle/pore Scale, Caltech (May 2012),
- Recent Developments in the Understanding of Soil Behavior, Purdue (April 2012)
- Soil Phenomena At The Particle/Pore Scale, Northwestern University (April 2012)
- Energy: a Geo-Centered Perspective, University of Wisconsin- Madison (November 2011)
- Natural Gas And Hydraulic Fracturing, Clean Energy Speaker Series, Georgia Tech (October 2011)
- Bio-Geotechnology, US-UK workshop, Cambridge University (September 2011)
- Energy Geotechnology – Revisiting Soil Behavior, Kansas University (April 2011)
- Energy: Infrastructure Implications, University North Carolina Charlotte (March 2011).
- Discontinuities in Soils, ETH Zurich (March 2011).
- Soils and Waves, Ruhr-Universitat Bochum, Germany (March 2011).
- Soil Behavior at the Grain Scale, North Carolina State University, February 2011.
- The Role of Civil Engineers in the Energy Challenge, Shaw Lecture, North Carolina State University, February 2011.
- Energy Geotechnology, University of Pittsburg, January 21 2011.
- Particulars of the Particulate, University of Sydney, Australia, November 2010.
- The Characterization of Hydrate Bearing Sediments, Int. Symposium on Methane Hydrate Resources, Tokyo, November 2010.
- Coupled Processes in Sediments -Emergent Phenomena. Oregon State University, Corvalis OR, October 2010.
- Cutting Edge Technologies, GT-ME Invited Speaker, October 2010.
- Diversity in Universities, GT Symposium, October 2010.
- Soils: From Grain-Scale Rules To Emergent Phenomena, U.N. Cordoba, Argentina, August 2010.
- Geotechnical Phenomena in Energy Applications, Texas A&M University, April 2010.
- The Interrelationship of Research, Teaching and Industry Practices in the Development of Geotechnical Engineering, Plenary Pannel, ASCE National Conv. GeoFlorida, February 2010.
- Discontinuities in Granular Materials, Horto, Greece, 2009.
- Energy Geoengineering, *Université Joseph Fourier*, Grenoble, France, June 2009.
- Frictional Phenomena in Granular Media, Ein Gedi, Israel, January 2009.
- Small and large strain soil response, U. Buenos Aires, Argentina, April 2009.
- Soil behavior – particle and pore-scale processes, U. Nacional de Cordoba, Argentina, April 2009.
- Geotechnical Challenges in Energy Solutions, Northwestern U., Evanston, March 2009.
- Soil Friction, ASCE Geotechnical Division, Atlanta, February 2009.
- Inverted Base Pavement, Georgia Crushed Stone Assoc., Annual Meeting, Atlanta, February 2009.
- National Research Council – Review of DOE Hydrates Programs, Denver, December 2008.

- Hydrate Bearing Sediments, Colorado School of Mines, Golden, December 2008.
- The properties of hydrate bearing sediments, Massachusetts Institute of Technology, October 2008.
- Bioactivity in the Deep Biosphere, *Chapman Conference*, Portland, Mayne, October 2008.
- Geological and Geotechnical Engineering in the New Millennium, SETEC, Tennessee, October 2008.
- Engineering Ingenuity, Puerto Rican Young Presidents, Atlanta August 2008.
- Engineered Granular Materials, Lafarge, Lyon, France, June 2008.
- Geotechnical Phenomena in Energy-Related Problems, Ecole de Ponts, France, June 2008.
- Recent Observations Related to Bio-Chemo-Mechanical Coupling in Soils, Nuclear Regulatory Commission, Washington, May 2008.
- Revisiting Soil Behavior, ASCE San Diego Geotechnical Group, San Diego, May 2008.
- Geological and Geotechnical Eng. in the New Millennium, USUCGER, Sacramento, May 2008.
- Inverse Pitfalls – Geotechnical Examples, HRensselaer Polytechnic InstituteH, Troy, March 2008.
- Characterization procedures, Georgia Crushed Stone Assoc., Annual Meeting, Atlanta, February 2008.
- Energy and Geotechnology, Korea Advanced Inst. of Science and Technology, Korea, February 2008.
- Energy and Geotechnology, Arizona State U., Phoenix, October 2007.
- Energy and Geotechnology, Cambridge U., UK, July 2007.
- Energy and Geotechnology, Imperial College, UK, July 2007.
- Hydrate Bearing Sediments, Herriot-Watt U., Edinburg, UK, July 2007.
- Bio-Geo, NSF workshop, Boston, April 2007.
- Energy and Geotechnology, U. Southern California, Los Angeles, April 2007.
- Geotechnology and Energy, Tufts U., Boston, April 2007.
- Geotechnology and Energy, U. Waterloo, Canada, March 2007.
- Soil Behavior and Geophysical Measurements, Canadian Geotechnical Society, February 2007.
- Exploring the Potential Role of Geotechnology in Energy, NAE, Washington, January 2007.
- Geotecnia, U. de Buenos Aires, Argentina, November 2006.
- Engineering Soils, Tschebotariof Club, Purdue U., West Lafayette, September 2006.
- Granular Matter and Waves - Series of Lectures, Meeting on the Science and Technology of Complex Fluids, Instituto de Fisica, U. Autonoma de San Luis Potosi, Mexico, August 2006.
- Hydrate Bearing sediments, Institut Français du Pétrole, Paris, November 2005.
- Lecture Series: (1) Soils with mixed fluid phase, (2) Methane hydrates in sediments, NAFTA, Puerto Vallarta, Mexico, November 2005.
- Unsaturated soils, UNAM, Mexico, November 2005.
- Lecture Series: (1) Fines Migration and Clogging, (2) Hydrate-bearing Sediments, École Nationale des Ponts et Chausses, Paris, France, June 2005.
- Effective Transport Under Zero Time-average Cyclic Flow, SIAM Conference on Mathematical and Computational Issues in the Geosciences, Avignon, France, June 2005.
- Unsaturated Soils: nm-to-km. MUSE-UPC, Barcelona, Spain, June 2005.
- Lecture Series: (1) Practical Soil Behavior and Characterization. (2) Fundamental aspects of soil behavior. U. Nacional de Chile, Santiago, Chile, May 2005.
- Caracterizacion Geofisica de suelos, Conf. Mex. Mecanica Suelos, Guadalajara, Mexico, April 2005.
- Micromechanical aspects of soil behavior, NSF workshop, Cambridge U., UK, March 2005.
- Soil Characterization, U. de los Andes, Bogotá, Colombia, February 2005.

- Phenomena in Soils, UPC, Barcelona, Spain, June 2004.
- Engineered Particulate Systems, U. Minnesota, Minneapolis, March 2004.
- Engineered Particulate Systems, MIT, Boston, February 2004.
- Liquefaction: Characterization and Monitoring, US-Japan Workshop, Boston, June 2003.
- Soil Characterization: Simple Tests … Great Insight, Virginia Polytech. Inst., Blacksburg, April 2003.
- Geotechnical Processes – Wave-based Monitoring, Oxford U., UK March 2003.
- The Relevance of Particle Shape, ISSMFE-TC29 Workshop, London, UK, March 2003.
- Soil Behavior -Microscale Phenomena-, Georgia State U., Atlanta, December 2002.
- Soil Properties – History, Fundamental Interpretation and Current Trends, ASCE Georgia Section, Atlanta, September 2002.
- Soil Parameters for Eng. Design, Australian Geomechanics Society, Perth, Australia, June 2002.
- Geophysical methods in Centrifuge Modeling, Center for Offshore Foundation Systems, U. Western Australia, Perth, Australia, June 2002.
- Recent Advances in Subsurface Characterization with Geophysical Methods, Colegio de Ingenieros, San Juan, Puerto Rico, December 2001.
- Geophysical Tests in Centrifuge Modeling, International Symposium on Geotechnical Centrifuge Modelling and Networking, Hong Kong, December 2001.
- Fundamentals of Particulate Materials, Fourth International Workshop of Porous Media, Puerto Vallarta, November 2001.
- Micro-Scale Aspects of Chemical-Mechanical Coupling, International Workshop on Chemical-Mechanical Coupling, Italy, June 2001.
- Fines Generation, Characteristics and Potential Uses, Nat. Stone Assoc., Washington, February 2001.
- Particle-level Processes in Soils, U. Nacional Autonoma de Mexico, November 2001.
- Fundamentals of Soil Behavior and Geophysical Measurements in Today's Geotechnical Engineering Practice, GeoSyntec, Atlanta, July 2001.
- Exploring Soil Behavior at the Microscale, Dep. Civil Engineering, RPI, Troy, NY, May 2001.
- Particulate Materials: Behavior and Process Monitoring with Elastic and Electromagnetic Waves, Louisiana State U., Baton Rouge, February 2001.
- Particulate Materials: Behavior and Process Monitoring with Elastic and Electromagnetic Waves, Duke U., Durham, December 2000.
- Geophysical Process Monitoring in Geotechnical Centrifuges - Possibilities and Challenges, UC Davis, Sacramento, December 2000.
- Seismic-Wave-Based Testing in Geotechnical Engineering, Georgia Tech, Atlanta, December 2000.
- Soils and Waves, Earth and Atmospheric Sc. Colloquium, Georgia Tech, Atlanta, December 2000.
- Soil Phenomena and Wave-based Characterization, U. Texas, Austin, October 2000.
- Soil behavior and its characterization with waves, U. Colorado, Boulder, April 2000.
- Tomography and the State of Stress, Petroleos de Venezuela, INTEVEP, Venezuela, January 2000.
- Advances in Geophysical Investigations for Highway Projects, Transp. Research Board, Washington, January 2000.
- Dimensions in Soil Behavior, MIT, Boston, November 1999.
- Lecture Series: "Energy and Particulate Materials - Unique Phenomena". Delivered to technical groups at AMACO, Texaco, Mobil, Halliburton, Texas, September 1998.
- Decision Making and Creativity, MBA Strategic Planning, Kennesaw State U., Atlanta, July 1998.
- Characterization of Particulate Materials, Oak Ridge National Laboratory, Oak Ridge, March 1998.

- Soils and Waves. Virginia Polytechnic Institute and State U., Blacksburg, January 1998.
- Lecture Series: "Wave-Based Characterization of Particulate Materials". Delivered at: UPR, ARCO, Mobil, Chevron, Exxon, Unocal, Texaco, and Shell. Dallas and Houston, August 1997.
- Particulars of the Particulate. NAFTA. Calgary, Canada, May 1997.
- Lecture Series: (1) Research Issues in Geotechnical Engineering. (2) Waves and Discrete Media, U. Nacional de Córdoba, Argentina, August 1996.
- Characterization of Particulate Materials, Polytechnic U., Brooklyn, March 1996.
- Experimental Procedures for the Characterization of Particulate Materials with Mechanical and Electromagnetic Waves, NAFTA, Puerto Vallarta, Mexico, November 1995.
- Lecture Series: (1) Fundamentals of Soil Behavior. (2) Study of Soils and Geo-phenomena with Mechanical Waves. (3) Study of Soils and Geo-phenomena with Electromagnetic Waves. (4) Experimental Evaluation of Lagunilla's Soil with Waves. Petroleos de Venezuela, October 1995.
- Lecture Series: at leading Universities and Institutes. Seminars at: U. Cambridge (UK). Imperial College (UK). Ecole Polytechnique (France). Norwegian Geotechnical Institute (NGI-Norway). SAGA Petroleum Research (Norway). England, France, Norway. Scientific visit, June 1995.
- Studying Fundamentals of Soil Behavior with Wave Propagation, U. California at Berkeley, San Francisco, June 1995.
- Characterization of Particulate Materials with Mechanical and Electromagnetic Waves, Georgia Tech, Atlanta 1995.
- Lecture Series: (1) Tokyo U.: Geotechnical Tomography. (2) Kyoto U.: Wave-Based Techniques in Geotechnical Engineering. (3) Fukuoka U.: Process Monitoring with Mechanical & Electromagnetic Waves. Scientific visit, Japan, June 1994.
- Low Strain Material Testing and Tomographic Imaging in Microzoning Studies, "Franco-Latin American Colloquium on Seismic Microzoning", Punto Fijo, Venezuela, November 1993.
- Imaging Stress Changes within Diques Costaneros, Maracaibo, Venezuela 1993.
- Geophysical Methods in Geotechnical Engineering, U. Michigan, Ann Arbor, 1992.
- Application of Mechanical Waves in Geotechnical Engineering, New Jersey Inst. Tech., October 1991.
- Innovation in Geotechnical Engineering, in Managerial Implications of Current Developments in Sc. & Tech., Seminars for Executives and Managers, New York, October 1991.
- Lecture Series: (1) La Creatividad en Ingenieria (Engineering Society - Ojeda). (2) Sistemas Expertos - Geotecnia (Venezuelan Society of Soil Mechanics and Foundation Engineering - Caracas). (3) Wave-Based Technologies. Venezuela, July 1991.
- Earthquakes and Seismic Design, "Visiting Scientist Program", Rockland County, June 1991.
- Wave-Based Technologies in Civil Engineering, U. Waterloo, April 1991.
- Geotechnical Engineering: A New Generation, Long Island Geological Soc., New York, October 1990.
- Geotechnical Tomography, Lehigh U., Bethlehem, November 1990.
- New Tools for Geotechnical Engineers, MIT, Boston, February 1988.
- Fuzzy Sets and Engineering Applications, Polytechnic U., Brooklyn, November 1987.
- Fuzzy Sets and Knowledge Based Systems, Tschebotarioff Seminar, West Lafayette, April 1987.
- Knowledge Systems in Engineering, Polytechnic U., Brooklyn, February 1987.
- Centrifuge Modeling, Tschebotarioff Seminar, West Lafayette, February 1987.
- Argentina. Introduction to AI, Dep. Ingenieria Civil, U. Nacional Cordoba, Argentina, June 1986.
- Concepts in Artificial Intelligence, Tschebotarioff Seminar, West Lafayette, April 1986.

*Other Conference Presentations*

- Index and Geotechnical Properties of Hydrate Bearing Sediments from the Krishna-Godavari Basin, India, February 2008.
- Soils in Extreme Conditions, AFSOR - Florida, January 2007.
- Granular Materials with Mixed Fluid Phase, 6th Int. Work. Porous Media, Mexico, November 2005.
- Bender Element Nuisances, Int. Conference Pre-Failure Deformation, Lyon, September 2003.
- Tomographic Imaging: Potentials and Limitations, Non-Destructive Evaluation of Aging Structures and Dams, SPIE Conference, Oakland, June 1995.
- Mechanical and Electromagnetic Wave Monitoring Geo-Environmental Processes, NSF Conference on Geo-environmental Problems in Latin America, Puerto Rico. September 1994.
- Image Enhancement in Geotomography, "Conf. on Digital Image Processing: Techniques and Applications in Civil Engineering", Hawaii. March 1993.
- Corrosion in Geotechnical Media: The Potential Use of Electromagnetic Waves, Canadian Geotechnical Conference, Toronto, November 1992.
- Geophysical Laboratory and Field Testing, US-Canada Workshop on the Future of Geotechnical Research (NSF/NSERC), Oklahoma, October 1992.
- Imaging the State of Stress in Particulate Media, Soc. Eng. Science, San Diego, September 1992.
- Waves and Geomaterials, NSF Grantees Conference, Puerto Rico, June 1992.
- Geotechnical Tomography, 7th Nat Conf Microcomputers in CE, Orlando, November 1989.
- Human Factors and Communication Problems in Foundation Engineering, Foundation Engineering Congress, June 1989.
- Rock Excavation with Microwaves, Foundation Engineering Congress, June 1989.
- Fuzzy Windows and Classification Systems, NAFIPS, May 1987.
- Elicitation of Membership Functions, NSF Civil Eng. Applications of Fuzzy Sets, October 1985.

## B. OTHER SCHOLARLY ACTIVITIES

*Science Teams*

- Coupled processes – Australia (PI: G. Narsilio, U. Melbourne – 2020)
- Methane hydrates – China 111 Project (PI: Huiming Tang assisted by Fulong Ning – 2020-2022)
- Red Sea Research: seeps, deeps, metalliferous accumulations (multiple cruises, 2015-2022).
- Expert Elicitation of Risk and Attendant Uncertainties in Carbon Capture and Storage (CCS), Canada (2015).
- Lead field science team, Leg III drilling expedition (Cruise: Spring 2011).
- International Inter-Laboratory Comparison – Properties of Hydrate Bearing Sediments (with C. Koh and W. Waite). Announcement in DOE-FITI June 2010.

*Visiting Scholar (Annual, one-month long scientific stays)*

- Université Joseph Fourier, Grenoble, France. June 2010 (Invited by Dr. G. Viggiani – Micro-CT – 10days).
- Université Joseph Fourier, Grenoble, France. June 2009 (Invited by Dr. G. Viggiani – Localization).

- Ecole Nationale des Ponts et Chaussees ENPC, Paris, France. July 2008 (Invited by Dr. O. Coussy – Porous and granular media).
- Cambridge U., Cambridge, UK. July 2007 (Invited by Dr. K. Soga –Methane hydrates).
- Politechnico de Torino, Torino, Italy. June 2006 (Invited by Dr. S. Foti – Geophysical methods).
- Ecole Nationale des Ponts et Chaussees, Paris, France. June 2005 (Invited by Dr. P. Delage – Fundamental soil behavior).
- Technical U. Catalonia, Barcelona, Spain. June 2004 (Invited by Dr. E. Alonso. Unsaturated soils).
- Center for Offshore Foundation Systems, U. Western Australia, Perth, Australia. June 2002 (Invited by Dr. M. Randolph – Cemented soils and geophysical characterization).

## VIII. LABORATORY AND FIELD FACILITIES - DEVELOPMENT

### A. DEVELOPMENTS IN THE LAST 10 YEARS

*Lab-on-a-bench (Sediments).* Based on cellphone: friction, size&shape, specific surface, LL. LC-NMR. $V_s$-$V_p$- $\sigma_{el}$-$\varepsilon$*. CS-parameter. RSCS classification

*Lab for fractured rock mass.* Multi-mode resonant columns (matrix and fractured rock). Matrix-k & fracture-T. True triaxial ($V_s$, $V_p$, $k_T$, HF)

*Rock-fracture lab.* 3D printed - Milled rocks. Optical and X-ray monitoring. Color, pH, thermal

*SOIL-database.* Includes multi-entry data for more than 6500 soils. Allows for parameter prediction and check for self-consistency

*Pressure Core Characterization Tools (Hydrate bearing sediments).* Manipulator, cutter, $V_s$,$V_p$, $\sigma_{el}$, $S_u$, oedometer, bio-sampler & cultures, direct shear, controlled depressurization, fluid sampler

*Distributed seafloor observatory.* >3000m water depth. Acoustic, seismic. P-T-$\sigma_{el}$-pH. Gyroscopes. Acoustic release. GPS, radio.

*Multi-physics penetration probe.* Seafloor sediments up to 3000m water depth. P-T-$\sigma_{el}$. Differential penetration resistance. $V_s$, $\sigma_{el}$, $\mu_{mag}$. Video. Fluid-k & sampler

*Well Monitoring – Cementation.* (1) Stable ferromagnetic muds. (2) Imaging torpedo probe

### B. EARLIER DEVELOPMENTS

*Specialized testing facility for the study of fractured rock and particulate materials.* Includes unique devices (e.g., atomic force microscopy, pore size analyzer), precision electronics (e.g., low and high frequency impedance analyzers), wide range of transducers (e.g., mechanical, optical, chemical, time lapse photography and digital signal processing), and unique software for data processing, inversion and forward modeling. Some of the unique and customized designed devices follow:

- *Ring shear*. Large-size and capacity to study interface behavior, e.g., piles, geotextiles, silos.
- *Resonant column systems*. Torsional and flexural mode; random mode excitation; very low strain ($\gamma \approx 10^{-8}$); deviatoric loading in AC and AE. Counter EMF.
- *Intact rock small-strain testing*. Free-free resonant mode for velocity and damping determination.

- *Geophysical true triaxial – $V_s$ and Stress Tomography*.
- *PDC waveguide*. Multimode, broadband, spectral measurements of velocity and attenuation.
- *Tomographer for electromagnetic emissions*. Cavity for the monitoring of electromagnetic emissions during quasi-static and dynamic loading of specimens. Includes software development for the inversion of source location.
- *Large-particle simple shear and true triaxial*. Instrumented with piezo-transducers for the study of wave propagation in altered regular packings.
- *Multiphysics cells for process monitoring with mechanical and electromagnetic waves*.
- *Cells for determination of complex permittivity*. Two and four terminal connection systems.
- *In-shelby-tube testing*. Study of velocity-stress relations without removing specimen from Shelby tube - Minimizing sampling effects on diagenesis.
- *Simplified procedure for the determination of critical state parameters*.
- *Needle-conductivity probe*. Micro-scale study of spatial variability.
- *Cell for electrical ion reduction in slurries*.
- *Large axisymmetric triaxial cell for hydraulic fracture studies*.
- *Probe for the characterization of very soft clayey sediments*.
- *Chamber for the study of sand production*.
- *Software:* a wide range of algorithms developed for signal processing (1D, 2D, space and time), inversion (from geothermal history to tomographic imaging; matrix based algorithms, iterative algorithms, fuzzy logic), material studies (molecular dynamic simulation to study double layer phenomena, coupled hydro-chemo-thermo-mechanical processes; pore networks), engineering systems (analysis of soil-structure load transfer; thermal piles).

# IX. SERVICE

## A. PROFESSIONAL CONTRIBUTIONS

*National Academies - Committees*

- Member, Committee on Future Directions for the U.S. Geological Survey's Energy Resources Program, USA National Academies, 2017-2018.
- Member, Fractured Rock Committee, USA National Academies, 2013-2014.
- Member of standing Committee on Geological and Geotechnical Engineering COGGE, USA National Academies, 2006-2011.
- Participant, Frontiers of Engineering, USA National Academy of Engineering, Irvine, November 2003.
- Member, Study Committee on Geological and Geotechnical Engineering in the New Millennium: Opportunities for Research and Technological Innovation (2004-2006).

*Editorial or Review Boards*

- Member Editorial Board, Chinese Journal of Geotechnical Engineering (2021)
- Member Advisory Board, Teknik Dergi (Technical Journal), Turkish Chamber of Civil Engineers (2021)
- Invited Editor (see publications)
- Member Editorial Board, Korean J. Geotechnical Engineering (2010)
- Member DOE Review Panel for National Laboratories (Methane Hydrates), January 2006.
- Member Editorial Board, Revista Los Andes (indexed Journal), since 2005.
- Member Editorial Board, Revista Desastres Naturales (indexed Journal), 2001-2006.
- Associated Editor, Revista Desastres Naturales (indexed Journal), 2006-current.
- Member Editorial Board, Acta Geotechnica (Journal), 2005-2007.

*Technical Committees and Advisory Boards*

- Saudi Arabia representative, COP26 – Visions For A Net-Zero Future (2021)
- Advisory Board, 2nd International Conference on Energy Geotechnics, UC San Diego, September 2020→2021.
- Intl. Conf. Energy, Power, Petroleum and Petrochemical Eng., Beirut, April 2017.
- Member, ASCE representative, Carbon Management Technology Conference, February 7th through 9th 2012 in Orlando.
- Member, Geomechanics from Micro to Macro, ISSMGE TC105 (2011 – present)
- Member, Scientific Committee, "Mechanics and Physics of Porous Solids: A tribute to Pr. Olivier Coussy", April 2011, Paris.
- Member, GCSA Technical Committee, 1999-current.
- Member - USA Representative, ISSMGE TC10 Geophysical Committee, 1998-2007.
- Participant, Energy Security, Innovation & Sustainability Initiative, Council on Competitiveness, 2007.
- Member, Technical Committee, "TDR 2006", Purdue U, 2006.
- Member, GMA Environmental Committee, 1998-2006.
- Member Int. Advisory Committee GeoX'06 Workshop on X-Ray tomography, Aussois, France, 2006.
- Member Organizing and Advisory Committee, Second Japan-US Workshop on Testing, Modeling and Simulation in Geomechanics, Kyoto September 2005.

- Scientific Committee, 3rd Biot Conference, U. Oklahoma, Norman, 2004-2005.
- Member, USUCGER Research Committee, 2003-2006.
- Chairman, ASCE Geophysical Committee, 1993-1998.
- Member, ASCE Geophysical Committee, 1992-1993; 1998-2003.
- Member, Consortium of Universities for Research in Earthquake Engineering, CUREE, 2001-2002
- Founding Member - USA Representative, ISSMGE TC35 Micro-Geomechanics, 2001-2003.
- Core Member, ISSMGE TC-29 Laboratory Characterization Committee, 2001-2003.
- Scientific Committee, Int. Union Theoretical and Applied Mechanics Symp., IUTAM-2002, "Mechanics of physicochemical and electrochemical interactions in porous media", 2002.
- Member, NSF-NEES Technical Advisory Board, Lehigh U., 2002-2004.

*Organizer of Conference, Workshops, or Sessions*

- Co-organizer, Mini Symposium on CO2, InterPore, New Orleans, 2018
- Organizer, KAUST Athenaeum on Dissolution and Precipitation, February 2015.
- Organizer, GeoLatin III- Geotechnical Research in Hispano-America, Atlanta, February 2014.
- Organizer, Workshop on Thermal Energy Geostorage, Weimar, June 2013.
- Organizer, Workshop on Spatial Variability, Caltech, June 2013.
- Organizer, GeoLatin II - Geotechnical Research in Hispano-America, Atlanta, October 2011.
- International Laboratory Comparison – Hydrate Bearing Sediments, with W. Waite (USGS), and C. Koh (CSM). Results published 2011.
- Hydrate Bearing Sediments, US-Japan Symposium, Atlanta, December 2010.
- Hydrate Bearing Sediments, National DOE meeting, Atlanta, January 2010.
- Member, Seminar Committee, ASCE-Atlanta, 2005-2009.
- Organizer, Lafarge Workshop, Atlanta, 2009.
- Organizer, Annual Sower's Event, 2005-2009.
- Co-Chair, IS-Atlanta Deformation Characteristics of Geomaterials, September 2008.
- Organizer, Workshop on the Properties of Hydrate Bearing Sediments, Atlanta, March 2008.
- Organizer, GeoLatin I - Geotechnical research in Hispano-America, Atlanta, February 2006.
- Organizer, student competition at GeoCongress, 2006.
- Organizer, 4 Sessions on Geophysics, ASCE GeoLogan, 1997. Including ASCE, EEGS, NSG-SEG.
- Organizer, Field Demonstration of Geophysical systems, GeoLogan, 1997.
- Organizer, Workshop Geophysical Applications in Geotechnical Engineering, 1993.
- Organizer, Session in Structures Congress, "Human Factors in Design and Construction", 1990.
- Co-organizer, session 77th ACS Colloid and Surface Science Symp., Atlanta, 2003.
- Co-Chair, Session in PanAmerican Conference, Boston, June 2003.
- Organizer, Technical Forum on Georgia Mining, Georgia Institute of Technology - Industry, State Agencies and Academia, September 29, 2004.

*Research Institutes*

- Member, Porous Media Research Institute, U. Waterloo, Canada, 1994-1997.

*Board of Directors - Research Advisor - Editorial Board*

- National Stone Association, Washington, 1998.
- National Academy of Sciences. Reviewer of research agenda, 2000.
- Senior Board Member, USUCGER, 2003-2004.

*Reviewer of Academic Programs*

- University of South Florida, Department of Civil and Environmental Engineering, 2011.

*Reviewer of Research Proposals*

- National Science Foundation, Individual Proposals, Industry Incentive, Panel Review member, Initiation Awards, Equipment Grants, Presidential Young Investigator, Unsolicited Proposals, SPIR, since 1990.
- Hong Kong National Research Council, 1997.

*Reviewer of Journal and Conference Articles*

- Geotechnique, Institution of Civil Engineering, UK
- Applied Clay Science
- ASCE J. Geotechnical Engineering
- ASCE J. Structural Division
- ASCE J. Transportation Engineering
- Geotechnical Testing Journal
- Canadian Geotechnical Journal
- TRB - Transportation Research Board
- ASCE Conferences, multiple conferences in structures, geotechnical, and other disciplines.

*Reviewer of Books*

- J. Wiley and Sons
- PWS Publishing

*Membership - Professional and Research Societies*

- Associate Member, American Society of Civil Engineers.
- Member, International Society of Soil Mechanics and Foundation Engineering
- Member, Sigma Xi.
- Member Society of Exploration Geophysicists SEG.
- Member, Near-Surface Geophysics NSG-SEG.
- Member, Environmental and Engineering Geophysical Society EEGS
- Member, American Society for Non-Destructive Testing.

*Impact of research results in commercially available devices*

- Tomographic methods documented in the book by Santamarina and Fratta were implemented in the pile diagnostic system CHUM commercially available from Piletest, UK and Israel.
- Flexural mode resonance (paper with Cascante) and reduced counter EMF (paper with Wang) were implemented in the resonant column commercialized by GDS, Hampshire – UK.

- Plug-based installation of bender elements (paper with Lee) - Commercialized by GDS, Hampshire – UK.
- High pressure chambers for the study of hydrate bearing sediments and characterization of pressure cores (Geotek UK and KIGAM South Korea)
- $G_{max}$-fork for high-resolution characterization of soft sediments. Consulting services in South Korea
- Detection of honeycombs in fresh concrete using elastic and electromagnetic waves (PPA by EPRI, USA).
- In-Shelby Testing

*Other*

- US representative, NSF Sponsored Workshop at ICSMGE Istanbul Conference, August 2001.
- Recorder, Session at the ICSMGE, Istanbul, August 2001.
- Panelist, Satellite Conference on Micromechanics, Istanbul, August 2001.
- Charter Member, Purdue Geotechnical Society, since 2003.

*Media*

- Spotlight, Fire in the Ice – DoE (2013)
- Geo-Legend (2014), ASCE Geostrata Magazine.
- Interviews and support to investigative reporting (CNN-Español, National Public Radio). Themes: Katrina (2005), Petroleum (2006), Levees (2006), Energy (2007 and 2008). Featured articles in Hispanic Engineer (11/2003) and in Mipymes (on engineering and creativity, Ecuador - 10/2006).

## B. CAMPUS CONTRIBUTIONS

*At Georgia Tech (2023 – on)*

- CEE RPT Committee (2023 – present)
- New on-line program development
  (recorded videos: https://www.youtube.com/@BENEATHtheSURFACE-CarlosSantam)

*At KAUST*

- Member, Faculty Search Committees (ERPE, Climate & Livability – 2021-2022)
- Member, Faculty Conversations team (lead Reinvention - 2021-2022)
- Member, Faculty Awards, Fellowships and Prizes Nomination Committee (AFPC – 2020-2022).
- Faculty mentorship:
  - Javier Ruiz Martinez (BESE - 2020)
  - Lukasz Jaremko (BESE - 2022)
  - Gaetano Magnotti (PSE - 2022)
  - Xu Lu (PSE - 2022)
- Chair, KAUST Study Group, Climate and Livability Initiative (2020)
- Thrust Lead, Circular Carbon Economy, Geo-Centered Solutions (2020)
- Member, Student Conflict of Interest Committee (2020)
- Member, University Conflict of Interest Committee (2020-2022)
- Member, University Research Governance and Oversight Committee (2019-2022)
- Chair, Coastal and Marine Core Lab, User Committee (2019-2022)
- Host VSRP (2016-2022)

- Member, University Academic Space and Equipment Allocation Committee ASEPC (2016-2022)
- Chair, Academic Misconduct Investigation Team (2019)
- Member, Academic Misconduct Investigation Team (2018)
- Task Force on Infrastructure (Fall 2018)
- Organizer, Academic Delegations
    - Turkish delegation (3 different universities), May 2018
    - Korean delegation (6 different universities - January 2018)
    - Lebanese academic delegation from American University of Beirut (October 2017)
- Guest speaker, eXcel, KAUST (2017); Science Cafe (2018)
- Organizer session at Winter Enrichment Program (2017): Engineering Ingenuity
- Member, University Promotions and Appointments Committee PAC (2015-2017)
- Chair / Member, Core Lab Users Committee (2015-2017)
- Judge Speaker competition (June 2016)
- Host high school students (University Saudi Initiatives – Summer 2016)
- Member, University Student Development Committee (2015).

*Goizueta Foundation Initiatives at Georgia Tech*

General Information. Endowment: 8.5 million dollars. Total number of students since 2002: 210 students.

Scholars (Undergraduate) - Total: 100

Non-Traditional Scholars (Undergrad) - Total: 20

Fellows (PhD) - Total: 90

Impact: Georgia Tech's College of Engineering has been ranked #1 in the U.S. for Hispanic graduate students by Hispanic Business Magazine (2011, 2010, 2009, 2008)

Main Activities. (1) Program development. (2) Recruitment and selection of outstanding graduate and undergraduate students of Hispanic origin. (3) Mentoring and retention (including: frequent meetings with all fellows and scholars, academic support, individual mentorship, receptions and social gatherings). (4) Promoting young talent (including: interaction with Scholars and Fellows to support them in advancing their careers, guidelines for post-graduation opportunities, help them build ties with academic institutions and industry, CV preparation, letters of recommendation). (5) Selection of Junior Faculty Chair (every 3 years).

Goizueta Visiting Scholars. Leading academicians are invited for scientific stays at Georgia Tech. Recent Goizueta Visiting Scholars included: V. Rinaldi, Giovanni Cascante, Arcesio Lizcano, J. Cartwright, A. Diaz-Rodriguez, Serge Leroueil, A. Gens, O. Coussy, L. Sambuelli, E. Alonso, M. Sanchez, J. Valdes, R. Fragaszy, V. Socco, M. Camilo, S. Cardon, M. Hyodo, H. Shin.

Other Activities. Distinguished Lecturer Series. Collaboration with Hispanic faculty across campus, in particular: P. Vela in EE, G. Goldsztein in Mathematics, R. Hernandez in Chemistry and J. Rogers in Public Policy. Receptions, social gatherings, interaction with potential donors.

Special Activities in relation to Latin American Countries

- Promote joint initiatives with Mexico, Guadalajara, Caracas, Bogotá, Medellin, Santiago de Chile, Cordoba.
- Editor of special issue of Revista Internacional de Desastres Naturales, Accidents e Infraestructura Civil (authors included the most prestigious geotechnical researchers in the subcontinent addressing the main soil types).
- Hosted the Argentinean delegation visit to GaTech. The delegation was headed by Dr. J. Barañao, Minister of Science and Technology and D. H. Timmerman, Ambassador to the US (August 2008).
- Geo-Latino Faculty Workshops in Atlanta (2006 and 2011– refer to workshops above).

- Member, USAC -United States Argentina Council (2002 – 2003).

*Other On-campus Contributions At Georgia Tech*

- Member, School of Civil and Env. Eng, Jones Chair Search Committee (2014).
- Member, College of Engineering's Regent's Professor Selection Committee (2013-2014).
- Member, School of Civil and Env. Eng, Strategic Committee (2012).
- Chair, School of Civil and Env. Eng, Dickerson Chair Search Committee (2012-2013).
- Member, School of Civil and Env. Eng, Post Tenure Review Committee (2012-14).
- Member, School of Civil and Env. Eng, Broad Faculty Search Committee (2012).
- Member, College of Engineering's Love Chair Search Committee (2011).
- Member, College of Engineering's Tenure and Promotion Committee (2011-2012).
- Member, Institute-wide search committee, Dean of Engineering (2010-2011).
- Member, School search committee, Tellepsen Endowed Chair (2010-2011).
- Member, Selection of Goizueta Junior Chair (2011)
- Member, College of Engineering's Tenure and Promotion Committee (2007-2009).
- Hosted lunch gathering for Hispanic faculty and staff to welcome President Dr. Peterson (April 2009).
- Coordinator/Organizer, Geotechnical seminars and short courses (1996/2000– Including short courses by: P. Annan, M. Harr, E. Alonso, A. Schofield, J. Mitchell, J. Huyghe, H. Poulos, A. Gens, O. Coussy).
- Member, Search Committee, Aerospace Engineering, School Director/Chair (2008).
- Member, College of Engineering's Diversity Advisory Group (2007).
- Member, Awards Committee (2004-2007).
- Coordination of School initiative on energy (2005).
- Coordination of Institute initiative arsenic control in water (2005).
- Member Area Committees for T&P (1999-2004).
- Member, Committee on Adjunct and Joint Appointments (2004).
- Member, III-Committee (2004).
- Member, Founder's Day Symposium, Iven Allan College (2004).
- Member, Institute-wide committee for the revision of T&P Evaluation Guidelines (2002-2003).
- Member, Institute-wide committee for International Center House (2002-2003).
- Member, Chair Selection Advisory Committee (2002).
- Member School Search Committee for two new faculty (2001-2002).
- Cluster Facilitator, Georgia Tech's *Leader-Shape* Program (2002).
- Member CEE's Award Committee (2001-2002).
- Member CEE's Regent's Professor Committee (2001-2002).
- Member Dean's Diversity Committee (2001-2002).
- Member, Educational Initiatives Committee (2001-2002).
- Co-Chair, Chair Selection Advisory Committee (1999).
- Member Dean's Award Committee (1999).
- Member of Re-appointment, Tenure and Promotion committee, Civil Engineering (1999).
- Civil Engineering representative to the General Faculty Assembly (1998-1999).
- Civil Engineering representative to the Academic Senate (1999-1999).

- Member, III-Quality Committee - Elected by faculty- (1996 - 1998).
- Member, Departmental Awards Committee (1998-1999).
- Coordinator, Geosystems Graduate Program – Semester Conversion (1997).
- Member, Strategic Planning Committee (1996).

*At U. Waterloo*

- Organizer, Workshop for Teaching Assistants (1995).
- Representative, Faculty Promotions and Faculty Tenure Com. (1995).
- Chair, Departmental Computer Committee (1995).
- Member, Faculty Search in Earth Science (1994-1995).
- Member, Chairman Selection Committee (1994).
- Member, Undergraduate Curriculum Committee (1994).
- Member, Undergraduate Affairs Committee (1993).
- Member, Strategic Planning Committee (1993).

*At Polytechnic University*

- Coordinator, Department Laboratories (1988-1991).
- Coordinator, Geotechnical Program (1991).
- Departmental Graduate Student Advisor (1987-1991).
- Organizer, Settlement on Sands, Design-research Competition (Fall 1989).
- President, Secretary, Sigma Xi, Polytechnic University Chapter (1989).
- Secretary, Sigma Xi, Polytechnic University Chapter (1989).
- Member, in several Search Committees for new professors (1988-1989 – 7 times).
- Member, Chairman Search Committees (1988-1989).
- Department Representative, University Admissions Committee (1989).
- Responsible for Geotechnical Laboratory (1988-1989).
- Organizer, University-Industry Cooperation Program in Geotechnical Engineering. Two student fellowships were awarded through this program each year (1989-1991).
- Department Representative, University Under. Curriculum Standards (1987-1989).

*At Purdue University*

- Co-Founder, "Tschebotarioff Club", Geotechnical Department, Purdue University (1985).

## C. EXTERNAL ACTIVITIES

*Reviewer IPCC reports - COP 26 - Kingdom of Saudi Arabia (Ministry of Energy)*

*Professional Registration*

- Registration Number 357-16. Centro de Ingenieros, Córdoba, Argentina
- Consejo Profesional de la Ingeniería y Arquitectura, #10068 (Junio 11, 1982)

*Consulting - Engineering*

- Fly Ash characterization, Geosyntec (2012-2015).
- Thermal properties of flowable fill, S&ME (2012).
- Fresh Concrete Characterization - Nuclear Power Plants, EPRI (2011&2012).
- TVA Kingston Coal Plant - Fly Ash Case Histories and Analysis, Geosyntec (2011).
- Pressure core testing, JOCMEG, Japan (2010).
- Wolf Creek Dam – Slurry, Geosyntec (2010).
- Submitted solution to control the spill of BP's operation in the Gulf of Mexico, following the explosion of the Deepwater Horizon drill rig, (4/2010).
- Calibrin Product - Process certification, Oil Dri (2010).
- TVA Kingston Coal Plant – Dam failure, Geosyntec (2009).
- Hydrate bearing sediments, KAIST (2008).
- Drainage system and dam analysis and verification, Petroleos de Venezuela, PdVSA (2006-2008).
- Pile data analysis, Beck (2006-2007).
- Contaminated site, DuPont (2005).
- Optimal Fuller's earth processing, Oil Dri (2004-2005).
- Blast Densification - Landfill foundation, GeoSyntec (2003-2004).
- Electromagnetic properties of geomaterials, NASM - Smithonian Institute (2003).
- Dynamic characterization of soils and rocks, GeoVision (2000).
- Characterization of gold-bearing rocks, Ganna, Premetco (2000).
- Tomographic Imaging Concrete Dam and Foundation Joint, MDC-OH (1999).
- High Frequency Permittivity Of Sandstones, U. Montana (1998).
- Low And High Frequency Dielectric Properties Of Shales, U.T. Dallas (1997).
- Tomographic Imaging Concrete Structures, MDC - Ontario – IRAP (1996-97).
- Stability Analysis of Pile Reinforced Foundation, Bhate Engineering Corporation (1996).
- Permeametry and pore fluid exchange - Soil-cement, CH2M Hill – Waterloo (1994-95).
- TTC Load Factors Verification Study, Advisor for DS-Lea Associates, Ltd. (1994).
- Image Analysis and the Evaluation of Rock Fragmentation, Franklin Associates (1993-94).
- Failure of a Crib Wall: Material Parameters, Reginatto Consulting Eng PC (1991).
- Permeability: recycled glass and stabilized fly ash, Reginatto Consulting Eng PC (1990).
- Failure Analysis: Ansonia Hotel Ceiling Collapse, Department of Buildings. NY (1990).
- Static and Dynamic Evaluation of Apshawa Dam, Reginatto Consulting Eng PC (1990).
- Settlement Due to Traffic Induced Vibrations, Red Hook, NY (1990).
- Dynamic Evaluation of Foundations for Housing Project in Armenia, SSR Consulting (1989).
- Subsurface Conditions and Excavation Problems for a Lift Station, Hobart, Indiana (1986).
- Dewatering Recommendations for a Waste Water Treatment Plant, Colombus, Ohio (1986).
- Static and Dynamic Analysis Dam - Comanche Peak Nuclear Power Plant, TERA, CA (1986).
- Analysis of Dam Failures. Analysis and processing of data, G.A. Leonards (1986).
- Laboratory Study of Sand Compaction, Danville, Indiana (1986).
- Criteria for Design Adequacy - Comanche Peak Nuclear Power Plant, TERA, CA (1985).
- Fundamental Frequency - Nuclear Containment Structure, TERA Corporation, CA (1985).

# X. RESEARCH FUNDING

**Endowments**

| | |
|---|---|
| KAUST: | baseline research funding from the KAUST endowment |
| Georgia Tech: | Goizueta Foundation Faculty Chair |
| | Georgia Mining Geomechanics Research |

**National Agencies**

| | |
|---|---|
| USA: | NSF DOE GaDOT |
| Canada: | NSERC ANDRA (France) |

**Industry**

| | |
|---|---|
| USA: | Chevron Shell Exxon EPRI AFTRE John Deere GaCSA PRF Parsons-Brinckerhoff |
| Canada: | INCO Turkstra Lumber |
| Saudi Arabia: | ARAMCO |
| Venezuela: | PDVSA-INTEVEP |

## A. AT GEORGIA TECH *(since 2023)*

*Granted*

- Clough Endowed Chair (2023 – present)
- TechFee (2024): (1) XRF, and (2) ISCO pump
- NSF Workshop on Fractured Rocks (2024-2025)

*Pending*

- Gas Flow in Porous Media, PRF (2025-2027 – Pending)
- NSF Landslide Center (2025-2029 – Pending)
- DOE ARPA SPARK Fracture sealing of Geological Hydrogen (2025-2026 – Pending)
- NSF Regional Innovation Engine – Critical Mineral Resources
- NSF ERC: Center for Climate-Ready Coastal Resilience

## B. AT KAUST *(2015-2023)*

- KAUST endowment - Baseline funding (continuous)
- KAUST Circular Carbon Economy: Transmissivity homogenization - Geothermal (2022-2024)
- KAUST ANPERC: Residual oil recovery – From pore-scale phenomena to the reservoir scale (2020-2023)
- KAUST Circular Carbon Economy: CO2 driven gravity drainage (2020-2024)
- KAUST Circular Carbon Economy: Energy geo-storage (2020-2024)
- KAUST CRG: Feasibility of CO2 Storage in Basalt and Mafic/Ultramafic Rocks within Saudi Arabia (PI: Hoteit - 2020-2023)
- KAUST CCF: Hydrodynamics in a large Red Sea carbonate platform lagoon and its impact on benthic and planktonic biota and sediment distribution – Al Wajh (PI: Vahrenkamp – 2020-2023)
- ARAMCO: Shales (2019-2022)

- ARAMCO: Red Sea Research: Seeps (2018-2022)
- ARAMCO: Shaped LCMs (2019-2021)
- ARAMCO: Corrosiveness (2019-2021)
- KAUST OSR - Magnetic Sensors – Collaboration (1/2016-12/2019)
- ARAMCO: Wave propagation at seismic frequencies (2016-2019)
- ARAMCO: Hydro-mechanical coupling (2016-2019)
- ARAMCO: Comprehensive characterization of tight reservoirs – Hydraulic fracture (2016-2019)
- ARAMCO: Geophysics – Geology & Drilling (2016-2018)
- ARAMCO: Sealants to overcome circulation loss in large apertures (2016-2018)
- ARAMCO: Red Sea Research: Seeps (2016-2017)
- KAUST OSR - Athenaeum on Dissolution and Precipitation (2015-2016)

### C. BEFORE 2015

*Endowed Funds (At Georgia Tech - combined endowment to support innovative research)*

- The Goizueta Foundation Faculty Chair (2002-2015).
- Georgia Mining Geomechanics Research Endowment (1998-2015).

*Grants and Contracts*

- Center for Biomediated Bio-Inspired GeoEngineering, NSF ERC (3.5M/yr,). Period: 2015-2020. Role: co-PI during proposal preparation (with E. Kavazanjian – lead at ASU, J. Dejong UC Davis, and P. Bandini NMSU). Note: D. Frost became GT leader after JCS's departure.
- Bio-mediated ground modification - NSF. Period: 2014-2017. Role: Co-PI (with Dimitrios Ntarlagiannis at Rrutgers U. and Rick Colwell at Oregon State U. (S. Burns became GT leader after JCS's departure)
- Hydrate bearing sediments: In situ Testing, DOE. Period: 2014-20116. Role: PI (S. Dai became GT leader after JCS's departure)
- Hydrates in fine-grained sediments, DOE. Period: 2012-2015. Role: PI (S. Dai became GT leader after JCS's departure)
- Hydrate bearing sediments: Simulation, DOE. Period: 2014-2015. Role: GT-PI (M. Sanchez: TAMU PI)
- Hydrates Research: Testing of Japanese Pressure Core Testing (Phase 4). DOE-JIP Chevron. Period: 2012-2013. Role: PI.
- Inverted base pavement – Testing and numerical simulation. GDOT. Period: 2012-2013. Role: PI.
- Hydrates Research: Advances in Pressure Core Testing, Analyses and Field Instrumentation (Phase 3). DOE-JIP Chevron. Period: 2008-2013. Role: PI.
- Identification of Honeycombs in Fresh Concrete (Parts 1&2). EPRI. Period: 2011-2013. Role: PI.
- Fly Ash Impoundment - Characterization. EPRI/GeoSyntec. Period: 2011-2012. Role: PI.
- Static and Dynamic Response of the Santee Formation at SRNL, DOE Savannah River National Laboratory. Period: 2008-2012. Co-PI with Burns, Mayne and Rix.
- CO2 Geological Storage: Coupled Hydro-Chemo-Thermo-Mechanical Phenomena - From Pore-scale Processes to Macroscale Implications. DOE-NETL. Period: 2010-2012. Role: PI.
- Methane Recovery from Hydrate-bearing Sediments. DOE. Period: 2006-2010. Role: PI (In collaboration with Costas Tsouris – ORNL).

- Bacteria in Soils. NSF. Period: 2006-2010. Role: PI (In collaboration with P. Sobecky).
- Sustainable Development, KAIST. Period: 2008-2009. Role: PI.
- Biocement – Sustainable and energy Saving Material for Construction and Waste Treatment, T.S. Chuan, Nanyang Technological U., Singapore. Period: 2009-2012. Role: Foreign Collaborator.
- Development of a CPT Module with In-String P- and S-Wave Source-Receiver. Exxon-Mobil Period: 08. Role: Co-PI (Leader: Paul Mayne).
- Inverted Base – Analysis and Numerical Studies. AFTRE- National Stone Association. Period: 2008-2010. Role: PI.
- Inverted Base – Field Study. GaDOT. Period: 2008-2009. Role: PI.
- Characterization of Hydrate-bearing Sediments. KIGAM-Korea. Period: 08. Role: PI at Georgia Tech (through collaboration with TS Yun at Lehigh University).
- Hydrates Research: Pressure Cores (Phase 2). DOE-JIP Chevron. Period: 2006-2007. Role: PI (In collaboration with Carolyn Ruppel, USGS).
- Discrete Element Models. J. Deere and DEM Solutions. Period: 2006-2007. Role: PI.
- Drag Rules for Quasi-Static Granular Media - Experimental and Numerical Studies. NSF. Period: 2006-2008. Role: PI (Collaboration: S. Koehler, Physics at Emory U. and WPI.
- Instrumented Pressure Chamber - JOI. Period: 2006. Role: PI.
- Post Katrina Investigation: Performance of offshore geotechnical systems - NSF. Period: 2005. Role: Co-PI (with D. Fratta – U. Wisconsin Madison).
- Manufactured Sand - Granular Flow - DOT and GCSA. Period: 2005-2006. Role: PI.
- Gas Hydrates Formation in Sediments – Lenses - Petroleum Research Foundation. Period: 2002-2004. Role: PI (In collaboration with C. Ruppel).
- Hydrates Research: Properties of Hydrate Bearing Sediments (Phase 1). DOE-JIP Chevron. Period: 2002-2005. Role: PI (In collaboration with Carolyn Ruppel, USGS).
- National Network for Earthquake Engineering Simulation Geophysical methods in geotechnical centrifuge. NSF-NEES. Period: 2000-2004. Role: PI.
- Ground Deformation Modeling - NSF – MAEC. Period: 2002-2004. Role: Co-PI (with Mayne).
- Gas Hydrates Research Initiative at GaTech - GaTech-FRP. Period: 2000-2002. Role: Co-PI (with Ruppel).
- Equipment - NSF. Period: 2000-2001. Role: Co-PI (with Haj-Ali and Frost).
- Scales in Geotech - NSF. Period: 1999-2002. Role: PI.
- Liquefaction - Education Module - NSF – MAEC. Period: 1999-2000. Role: Co-PI (with Rix, Frost, and Mayne).
- Soft Sediments - Characterization and Re-injection - Petroleos de Venezuela INTEVEP (Venezuela). Period: 1999-2000. Role: PI.
- Fines Migration - Clogging and Unclogging - Shell. Period: 1999-2001. Role: PI.
- (I) Post- Liquefaction Behavior. (II) Dynamic Behavior of Soft Soils - NSF – MAEC. Period: 1999-2002. Role: PI.
- Dynamic Behavior of Partially Saturated Soils - NSF – MAEC. Period: 1998-1999. Role: Co-PI (with Macari and Rix).
- Seismic Attenuation Lab and Field Studies - NSF. Period: 1997-2000. Role: Co-PI (with Rix).
- Energy Coupling and EM Emission - NSF – REU. Period: 1996-1997. Role: PI.
- Energy Coupling and EM Emission - NSF. Period: 1996-1997. Role: PI.
- Equipment and Student Support - Georgia. Period: 1996-1999. Role: PI.

- EM and NMR Study of Shales - UW Interdisciplinary Research. Period: 1995. Role: Co-PI (with Dusseault and Pintar).
- Process Monitoring - Mechanical and EM Waves - NSERC- Canada. Period: 1995-1996. Role: PI.
- Surface Waves in Concrete Testing - NSERC Ind. Univ Cooperative Research. Period: 1994-1996. Role: Co-PI (with Polak).
- Fractoemission Phenomena in Mining - INCO. Period: 1994-1996. Role: PI.
- Tomographic Imaging and 3D Visualization - MDC Geological Consultants. Period: 1994-1995. Role: Co-PI (with Polak).
- Computer Laboratory (Three Risk 6000 machines) - Turkstra Lumber. Period: 1994. Role: PI.
- Undergraduate Student Support and Research Funds - UW (Dean, Dept, ADF). Period: 1991-1994. Role: PI.
- Tomographic Imaging Geo-Systems - Petroleos de Venezuela. Period: 1994-1996. Role: PI.
- Characterization of Shales with Waves - NSERC and Industry. Period: 1995-1996. (Investigator - PI: Dusseault).
- Direct Current Resistivity Techniques for Reservoir Monitoring of EOR Processes - AOSTRA. Period: 1993-1995 (Investigator - PI: Dusseault).
- Dielectric Probe (Low Frequency) and Dielectric Probe (High Frequency) - WEEF, HP Corporation. Period: 1993. Role: PI.
- Workshop on Geotomography - NSF. Period: 1993. Role: Co-PI (with Rix, Chameau, and Woods).
- Densification Behaviour of Granular Salt and Binder-Salt Mixes - ANDRA (France). Period: 1993-1995. Role: Co-PI (with Dusseault).
- Equipment - Wave-Geomedia Lab - NSERC (Canada). Period: 1993. Role: PI.
- Lumber-Soil Interaction - Turkstra Lumber and NSERC Ind. Univ Cooperative Research. Period: 1993. Role: PI.
- Overpressured Sediments - UW Interdisciplinary Research. Period: 1993-1994. Role: Co-PI (with Yassir).
- Equipment Wave-Geomedia Lab - Government of Saudi Arabia (S. Arabia). Period: 1992. Role: PI.
- Process Monitoring with Electromagnetic Waves - NSERC (Canada). Period: 1992-1995. Role: PI.
- Electromagnetic Waves in Soil Characterization - NSF. Period: 1990-1992. Role: PI.
- Creativity in Engineering - Polytechnic U. & Industry. Period: 1989-1991. Role: PI.
- Industry-University Coop. Program - Zuzax Corporation, Parsons-Brinckerhoff, A. Reginatto PC. Period: 89-91. Role: PI.
- Infrastructure Risk Management - Transportation Research Consortium. Period: 1989-1991. Role: PI (with Turkstra, Vanmarcke).
- SS-CPT Based Geotechnical Tomography - NSF + ANDRA (France). Period: 1991. Role: Co-PI (with Juran).
- Non-Quantitative Parameters in Slope Stability - Exxon. Period: 1989. (Investigator - PI: Altscheffl).

## XI. INTELLECTUAL PROPERTY – STARTUPS

### A. PATENTS AND PROVISIONAL PATENT APPLICATIONS

(updates https://patents.justia.com/inventor/juan-carlos-santamarina)

*Sediment characterization*

- Colorimetry and image analysis determination of specific surface area - US Patent No. 11189046.
- Angle of repose system and method: US Patent No. 11060855.

*Fluid loss control - Transmissivity modification*

- Self-aggregating particles for lost circulation materials and related method (KAUST-ARAMCO 2023 - Submitted)
- Foldable particles for lost circulation materials and related method (KAUST-ARAMCO 2022 – Submitted)
- Transmissivity homogenization in fractured formations to mitigate water/fluid short-circuiting (KAUST - Applied Invention Disclosure, April 2022).

*Rock studies*

- Method and system for determining energy-based brittleness (KAUST-ARAMCO 2020 - US Patent NO: 12050297)

*Magnetic mud and monitoring tools*

- μ-CPT: Magnetic penetrometer (KAUST 2022 - In preparation)
- μ-LCM: Magnetic loss circulation material (KAUST 2018 - In preparation)
- Well Monitoring with Magnetic Tool, US Patent 11,578,584.
- Stable Magnetic Drilling Mud and Method U.S. Application No. 17/436,139

*Seafloor characterization*

- Multi-physics seafloor probe (KAUST 2020 - In preparation)
- Hydrostatically compensated device for ground penetration resistance measurements (US Patent publication number US-2022-0220686-A1 - 17/604,853).
- Submersible sensing system for water and sediment monitoring (US Patent publication number US-2022-0206181-A1 - **17/604,026**).
- In Situ Vs Profiling (KU & Georgia Tech - PPA 2006).

*Filtration*

- Stress-Controlled Granular Filtration and Flushing (SDSU: PPA 2/2005).

*Concrete*

- Void detection system (EPRI & GT - 13755724).

**B. STARTUPS**

- Vythos, winner Taqadam Pre-Accelerator (KAUST 2017).
- Lab-on-a-Bench, KAUST 2018, Taqadam Pre-Accelerator – Early Phase.

## XII. COLLABORATORS

Graduate Advisors:

- J. L. Chameau, Former President KAUST (PhD Advisor)
- D. Goodings, G. Mason University (MSc Advisor)

Current Collaborators (Outside Georgia Tech)

- Diego Manzanal, Universidad Politécnica de Madrid, Shales
- T. Finkbeiner, KAUST (on rock mechanics)
- Bicheng Yan, KAUST – Clays to shales
- George Turkiyyah, KAUST – Clays to shales
- A. Afifi, KAUST (on Red Sea)
- A. Almajed, King Saud University (on dune stabilization)
- J. Alvarellos, Repsol (capillary phenomena)
- J. Cartwright, Oxford U., UK (on polygonal faults, pipes and geo-plumbing)
- TH. Kwon, KAIST (on sediment engineering)
- G. Narsilio, U. Melbourne (on coupled processes)
- HS. Shin, U. Ulsan (on fractured rocks)
- L. Torres-Cruz, U. British Columbia (on tailings)
- Fulong Ning, China University of Geosciences, Wuhan

Current Industrial Collaborations

- R. Bachus, Geosyntec (on coal, fly ash)
- W. Hussein, ARAMCO (on hydrocarbon seeps in the Red Sea)
- A. Sherik, ARAMCO (on corrosion)
- E. Moellendick, ARAMCO (on loss circulation, reservoir analogue, shale properties, shaped particles)
- S. Sinan, ARAMCO (on comprehensive characterization of shales and HF)
- M. Jervis, ARAMCO (on stiffness at seismic frequencies)

Other close collaborators

- C. Arson, Georgia Tech (on multi-scale / multi-physics themes)
- A. Diaz-Rodriguez, Civil Eng., UNAM, Mexico (on high specific surface clays)
- D. Frost, Georgia Tech (on geo-systems)
- R. Fragaszy, NSF (on sustainability)
- G. Goldzstein, Mathematics, Georgia Tech (on analysis of geo-processes, clogging, AC enhancement)
- S. Koheler, Physics, Emory U. & WPI (on granular materials)
- A. Lizcano, Civil Eng., U. Los Andes, Colombia (on geotechnology – Volcanic ash soils)
- M. Polak, U. Waterloo, Canada (on surface waves).
- V. Rinaldi, U. Nac. Cordoba (on loess and geophysics)
- J. Rogers, Public Policy, Georgia Tech (on Creativity)
- C. Ruppel, Earth Sciences, Georgia Tech & USGS (on methane hydrates)
- M. Sanchez, Mechanics, U. Texas A&M (on coupled processes)
- K. Soga, Cambridge U. & UC Berkeley (on Bio-activity in soils).
- C. Tsouris, Oak Ridge National Lab (on geo-energy issues)
- G. Viggiani, J. Fourier University, Grenoble, France (on localization)
- W. Waite, USGS (on hydrates)
- F. Wuttke, Bauhaus-Universität Weimar & Kiel U., Germany (on coda analysis and energy storage)