CV OF DR MARCELO SANCHEZ

PERSONAL DETAILS

- **Complete name:** Marcelo Javier Sánchez Castilla
- **Nationality:** Argentinean/Spanish
- **Address:** Texas A&M University.
  Zachry Department of Civil Engineering,
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RESEARCH INTEREST

- Coupled Thermo-Hydro-Mechanical and Geochemical Numerical Analysis in Soils and Rocks.
  - Main Applications: Nuclear Waste Disposal, Gas Hydrates, Geothermal Energy, Hydraulic-fracturing, CO_2 Sequestration.
- Unsaturated Soils Mechanics, Expansive Soils and Desiccation Cracks in Soils
  - Main Applications: Clay Barriers, Earth Dams, Liners, Levees, Foundations, Pavement Sub-grades, railroads settlements
- Behavior of Frozen Soils
- Constitutive Modeling of Soils and Rocks
- Double Porosity Porous Media. Evolving Discontinuities in Porous Media.
- Integration of Fundamental Studies, Experimental Information and Numerical Methods

QUALIFICATIONS

- **2004. Ph.D. Doctor Ingeniero de Caminos, Canales y Puertos.** (Equivalent to a PhD in Civil Engineering). Universidad Politecnica de Catalunya (UPC). Barcelona, Spain**.** Thesis: "Coupled Thermo-Hydro-Mechanical analysis in low permeability media". Grade: excellent cum laude
- **1996. Master in Numerical Methods in Engineering.** (Equivalent to a MSc in Numerical Methods). Universidad Politecnica de Catalunya (UPC), CIMNE, Spain. Grade: excellent.
- **1991. Specialization in Highway Engineering**. Universidad Nacional de San Juan (UNSJ). San Juan, Argentina (one year course).
- **1990. Undergraduate degree in Civil Engineering.** Universidad Nacional de San Juan (UNSJ). San Juan, Argentina.

EMPLOYMENT SUMMARY

- **Oct 2009 to present. Texas A& M University (TAMU).** Department of Civil Engineering, College Station, Texas, US. Position: Associate Professor (tenured position).
- **Apr 2008 to Sept 2009. University of Strathclyde (USTRAT).** Department of Civil Engineering, Glasgow, UK. Position: Senior Lecturer (equivalent to Associate Professor) in Civil Engineering.
- **May 2005 to Mar 2008.University of Strathclyde (USTRAT).** Department of Civil Engineering, Glasgow, UK. Position: Lecturer (equivalent to Assistant Professor) in Civil Engineering.
- **Jan 1998 to Apr 2005. Universidad Politecnica de Catalunya (UPC).** Department of Geotechnical. Engineering. Barcelona, Spain. Position: Researcher.
- **Jan 1991 to Dec 1998. Universidad Nacional de San Juan (UNSJ).** Department of Geotechnical Engineering. San Juan, Argentina. Position: Lecturer.

MAIN ONGOING PROJECTS AND GRANTS

- **Oct 2013 to present.** 'THCM Coupled Model for Hydrate-Bearing Sediments: Data Analysis and Design of New Field Experiments (Marine and Permafrost Settings)'. Total around $ 485.7 K. Pro-rated amount: $331.8K. PI. Sponsor: DOE (Department of Energy, US).
- **May 2015 to present**. 'Geothermal Foundations to Reduce Utility Cost for New Buildings'. Total around $25K. Pro-rated amount 8K. Sponsor. Area 41 Challenge Grant program - TAMU.
- **Jan 2016 to present**. 'Collaborative PUC-TAMU research to advance current understanding on geomaterials behavior subjected to environmental actions'. Total around $33K. Pro-rated amount 16.7K. Sponsor. SEED FUND 2016 – TAMU & UC.
- **Jan 2015 to present.** 'FEBEX-DP Full-Scale Engineered Barrier Experiment – Dismantling Project'. Invited expert from UPC, Spain. Sponsor NAGRA Switzerland.
- **Jun 2016 to present.** 'Geothermal Foundations to Reduce Utility Cost for New Buildings II'. Total around $30K. Pro-rated amount 10K. Sponsor Energy Institute - TAMU

RECENT PROJECTS AND GRANTS

- **Jun 2016**. Travel Grant to attend the "Invited to participate as a speaker (sponsored) at the NSF Workshop on 'Geotechnical Fundamentals in the Face of New World Challenges'. NSF Headquarters, Arlington, Virginia. 17th to 19th Jul; 2016. Sponsor NSF. Total $ 1.2K. Pro-rated amount: $1.2K
- **Jan 2013** to **Dec 2015**. "Rails on Shrink Swell Soils: Problems and Possible Solutions". Total around $ 69K. Pro-rated amount: $62K. PI. Sponsor: Association of American Railroads (AAR).
- **Aug. 2012** to **Jul. 2015**. **'**Creep Behavior of Soil Nail Walls in High Plasticity Index (PI) Soils'. Total around $ 349.6K. Pro-rated amount: $252.8K. PI. Sponsor: Texas Department of Transportation.
- **Set. 2011** to **Jul. 2015**. **'**Interaction Between Drilled Shafts and Mechanically Stabilized Earth (MSE) Walls'. Total around $ 409.4K. Pro-rated amount: $204.7K. CoPI. Sponsor: Texas Department of Transportation.
- **Apr 2013** to **Dec. 2014**. 'Study of Large and Continuous Settlements Observed at Giddings Subdivision'. Total $ 100K. Pro-rated amount: $95K. PI. Sponsor: Union Pacific (UP).

- **Jul. 2011** to **Jun 2014**. "RISMAC Project". Total around $275K; TAMU amount around $ 24,3K. Pro-rated amount: $24.3K. PI from US**.** Funded by the European Commission C/Marie Curie IOF. Marie Curie Fellow: Dr Marcin Zielinski.
- **Jun 2012 to Sep 2013. '**Modeling clay materials behavior incorporating coupled chemo-mechanical phenomena'. Total around $ 130.7K. Pro-rated amount: $130.7K. PI. Sponsor: Sandia National Laboratories.
- **Mar 2013**. Travel Grant to attend the "International Workshop on Thermoactive Geotechnical Systems for Near-Surface Geothermal Energy: from Research to Practice", hold at the École Polytechnique Fédérale de Lausanne, Switzerland. 25th to 27th Marc. 2013. Sponsor NSF. Total $ 2K. Pro-rated amount: $2K
- **Set 2011 to Jul 2013. '**Rapid Field Detection of Moisture Content for Base and Subgrades'. Total around $ 315K. Pro-rated amount: $10K Researcher. Sponsor: Texas Department of Transportation.
- **Jan 2009 to Dec 2013.** "Biogeochemical Applications in Nuclear Decommissioning and Waste Disposal"**.** Consortium of UK Universities, PI Dr. Lunn (USTRAT). Assessor Work-Package 2.3. Total $ 3.0 M. Four years project, funded by EPSRC UK), reference EP/F055617/1.
- **May 2009 to May 2013.** Project **"GEO-EXCEL"** (GEO-engineering EXChanges between Europe and Latin-America)**.** Funded by EC/FP7 Marie Curie IRSES. PI while at Strathclyde. Total around $ 600 K from European Commission
- **Oct 2006 to Dec 2010.** "Numerical Modeling of Coupled Behavior in Unsaturated Soils". Project leader. PhD student Mr. Marti Lloret. Funded by Synergy scholarship funding (UK).
- **Nov 2007 to Nov 2009.** Project **"MADUS".** (Modeling Anisotropy and Destructuration in Unsaturated Soils). PI. Project funded one postdoctoral research fellow for 3 years, Dr Cordao Neto Total $ 375K from the EC. Contract**:** EC/FP6 MIF1-CT-2006-040375.
- **Dec 2004 to Nov 2008.** Project **"MUSE"** (Mechanics of Unsaturated Soils for Engineering). Member of the academic staff**.** Marie Curie Research Training Network, EC. Total $ 1.45M from the EC. Contact: MRTN-CT-2004-506861.
- **Feb 2005 to Jan 2009.** Project **"AMGISS"** (Advanced Modeling of Ground Improvement on Soft Soils). Member of the academic staff. Marie Curie Research Training Network, EC. Total $ 1.55M from the EC. Contact: MRTN-CT-2004-512120.
- **Feb 2004 to Dec 2007.** Project **"NF_PRO"** (Understanding and physical and numerical modeling of the process in the near-field, and their coupling, for different host rocks and repository strategies). Researcher. WP3. Integrated Project under the 6th Framework Program of the EC. Main partners: ENRESA (Spain); CIEMAT (Spain); UPC-CIMNE (Spain), BGR (Germany); SKB (Sweden); NIRAS/ONDRAF (Belgium); University of Wales (UK); POSIVA (Finland); SCK•CEN (Belgium); VTT (Finland); NAGRA (Switzerland), NERC-BGS (UK). Contact: FI6W-CT-2003-02389.
- **Jan 2000 to Dec 2004.** Project **"FEBEX II"** (Full-scale Engineered Barriers EXperiment for a deep geological repository for high level radioactive waste in crystalline host rock)**.** Continuation of FEBEX I. Researcher. Multi-disciplinary project funded by the EC and ENRESA (Spanish national company for radioactive waste management). Main partners: ENRESA (Spain); CIMNE (Spain); SKB (Sweden); POSIVA (Finland); Czech Technical University in Prague (Czech); AITEMIN (Spain); Institute of geologic and mining research, BRGM (France); ANDRA (France); BGR (Germany), NAGRA (Switzerland); Clay Technology (Sweden); VBB VIAK (Sweden); NIRAS/ONDRAF (Belgium). Contract: FIKW-CT-2000-00016.

- **Jan 1998 to Jan 2000** Project **"FEBEX I"** (Full-scale Engineered Barriers EXperiment for a deep geological repository for high level radioactive waste in crystalline host rock). Researcher. Funded by the EC and ENRESA. Contract: FI4WCT950006
- **Jan 1998 to Dec 1999.** Project **"GEOCODE"** (Development of friendly interfaces for numerical codes oriented to the simulation of geotechnical and environmental problems). Researcher. Funded by Ministry of Industry and Energy, Spain.

AWARDS, PRIZES AND OTHER RECOGNITIONS

- Outstanding Reviewer in 2015. Journal "*Computers and Geotechnics*
- Invited Professor, École Polytechnique Federal Lausanne (EPFL). Lausanne, Switzerland, August 2015.
- Outstanding Reviewer in 2014. Journal "*Computers and Geotechnics*"
- 'Impact on Research 2014' Zachry Department of Civil Engineering, Texas A&M University.
- Appointed by the National Accreditation Board of Colombia to evaluate the graduate program in geotechnical engineering of the National University of Colombia, Bogota. Activities to be performed during Aug. and Sep. 2014.
- Outstanding Reviewer in 2013. Journal "*Computers and Geotechnics*".
- NRC, *Canadian Geotechnical Journal*, paper recognition with an "Editor's Choice" for 2012; distinction granted to papers of particularly high caliber and topical importance. Paper: "Thermal–hydraulic–mechanical (THM) behaviour of a large-scale in situ heating experiment during cooling and dismantling" *Can. Geotech. Jnl.*, 2012, 49:(10) 1169–1195, 10.1139/t2012-076
- "George Stephenson Medal 2012". Institution of Civil Engineers (ICE, UK) Prestigious award for outstanding, top papers published across all ICE Journals in 2011. Paper: Hydromechanical behaviour of a heterogeneous compacted soil: experimental observations and modeling". *Géotechnique* 2011. Volume 61(5): 367 –386. DOI: 10.1680/geot.SIP11.P.015
- Prize 'Best Doctoral Thesis Session 2004-2005' (2000 euros, ex-aequo). 'Escuela Superior de Caminos Canales y Puertos', UPC, Barcelona, Spain. September 2006.
- Awarded medal for outstanding research paper at the International Workshop 3x4: Constitutive Modelling and Analysis of Boundary Value Problems in Geotechnical Engineering, Naples, Italy. June 2003. Paper title: "Coupled thermomechanics and beyond".

SUPERVISION OF GRADUATE STUDENTS AND POST-DOCTORAL RESEARCHERS

- **Post-Doctoral Researchers**
  1. **Dr. Beatrice Pomaro.** Post-Doc (funded by the Padova University, Italy). Feb. to Jul. 2014.
  2. **Dr. Marcin Zielinski** Post-Doc (funded by the EC via Marie Curie IIF Fellowship), RISMAC Project, Jun. 2011 to Jul. 2013.
  3. **Dr. Henghui Fan**. Post-Doc funded Ministry of Education of the P.R. China. From Oct. 2010 to Oct. 2011.
  4. **Dr. Manoel Porfirio**, Post-Doc (funded by the EC via Marie Curie IIF Fellowship), MADUS "Modeling Anisotropy and Destructuration in Unsaturated Soils", Nov. 2007 to May 2009. Supervision performed at Strathclyde University

- **Ph.D. Students**

Supervisions at Texas A&M University

1. **Michel Maedo.** Project title: "Coupled THM modeling of discontinuities in geomaterials". Chair. Aug. 2015 to present**.** Estimated graduation: Dec 2018.
2. **Miss Xi Luo.** Project title: "Behavior of expansive clays for nuclear waste disposal". Chair. Aug. 2015 to present**.** Estimated graduation: Dec 2018.
3. **Jumanah Hajjat.** Project title: "Hydromechanical behavior of unsaturated soils near saturation". Chair. Aug. 2014 to present**.** Estimated graduation: Dec. 2017
4. **Seokhyung Lee.** Project title: "Detection of drying cracks in soils". Chair. Aug. 2014 to present**.** Estimated graduation: Dec. 2017.
5. **JuYoung Lee**. Project title: "Behavior of frozen soils subjected to freeze/thaw cycles". Chair. Aug. 2014 to present**.** Estimated graduation: aug. 2017
6. **Mehdi Teymouri.** Project title: "Constitutive Modeling of Gas Hydrates Sediments" Chair. Sep. 2014 to present. Estimated graduation date Dec. 2017.
7. **Xuerui Gai**. Project title: "Thermo-hydro-chemo-mechanical coupled models for hydrate-bearing sediments in marine and permafrost settings". Chair. Sep. 2013 to present. Estimated graduation: Dec. 2016.
8. **Dong Wang.** Project title: "Rails on Shrink Swell Soils: Problems and Possible Solutions". Chair. Jan. 2013 to present. Estimated graduation: Dec. 2016
9. **Sewon Kim.** Project title: "Effect of intense drying in soils". Chair. Sep. 2011 to present**.** . Estimated graduation Aug. 2016
10. **Mohsen Mahdavi**. Project title: "Numerical modeling of creep behavior of soil nails in high plasticity clays". Chair. Completed. Graduation date: Aug. 2015.
11. **Gang Bi**. Project title: "Behavior of soil nail, walls in high plasticity clays". Co-Chair. Completed Graduation: Jul. 2015.
12. **Leonardo Cabral.** Project title: "Coupled hydro-mechanical fault reactivation analysis incorporating evidence theory for uncertainty quantification". Chair at TAMU. Completed. Graduation: Jul. 2015
13. **Mohammad Aghahadi.** Project title: "MSE retaining wall: an experimental and numerical study". Co-Chair. Completed. Graduation: Dec. 2014
14. **Ajay Shastri**. Project title: "Advanced coupled analyses in porous media". Chair. Completed. Graduation date Aug. 2014.
15. **Ghassan Akrouch.** Project title: "Energy piles in cooling dominated climates". Co-Chair. Completed**.** Graduation: May 2014.

Supervisions at Strathclyde University

16. **Alvis Antique**. Project title: "Effect of dissection cracks on hydro-mechanical properties of soils". Chair. Jun. 2007 to Jul. 2013. Completed.
17. **Thi Minh Hue Le.** Project title: "Risk management of slope instability". Sponsored by JRI. Co-Chair. Jul. 2008 to Dec. 2011. Completed.
18. **Marti Lloret.** Project title: "Numerical Modeling of Coupled Behavior in Unsaturated Soils'. Sponsored by SYNERGY scholarships. Co-Chair. Oct. 2006 to Jun. 2011. Completed.

19. **Gráinne El Mountassir** (maiden name McCloskey). Project title: "Geotechnical stability of flood embankments in Indonesia". Chair. Oct 2006 to Jan 2011. Completed.

- **MSc. Students**

Supervisions at Texas A&M University

1. **Bohan Zhou.** Project title: "Experimental and Numerical Study of Frozen Soils". Chair. Estimated graduation date Jul. 2016
2. **Abhijith Chandr Kamath** Project title: "Experimental and Numerical Study of Soil Nail Walls in High Plasticity Soils". Chair. Estimated graduation date Jul. 2016
3. **Naveen K Ganji.** Project title: "Behavior of Compacted Expansive Soils and its impacts on Railroad". Chair. Set. 2014 to present. Estimated graduation date May. 2016
4. **Duaa Aljeznawi**. Project title: "Experimental and numerical studies associated with desiccation cracks in soils". Set. 2014 to present. Chair. Completed. Graduation date: May 2015.
5. **Fernando Aponte.** Project title: "Coupled Analyses Involving Low Permeability Clays". Chair Completed. Graduation date: Dec. 2013.
6. **Lakshman K Dontha**. Project title: "Uncertainty Quantification in Coupled Thermo-Hydro-Mechanical Problems". Co-chair. Completed. Graduation date: May 2012
7. **Siddharth Khandelwal.** Project title: "Effect of Desiccation Cracks on Earth Embankments". Co-chair. Completed. Graduation date: May 2011.

EXTERNAL EXAMINER/REVIEWER OF PHD THESES

- **Benjamin Michael Shannon,** PhD thesis title: 'Fracture propagation of cohesive soils under tensile loading and desiccation'. External examiner. *Monash University.* Australia. Nov. 2013.
- **Khaled Khalil Altarawne,** PhD thesis title: 'Experimental and Numerical Studies of Diffusion in Geomaterials'. External examiner. *The University of Newcastle.* Australia. Jul. 2011.
- **Annan Zhou,** PhD thesis title: 'Constitutive Modelling of Hydromechanical Behaviour of Unsaturated Soils'. External examiner. *The University of Newcastle.* Australia. Jun. 2011.
- **Abel Jacinto,** PhD thesis title: 'Numerical modeling of clay barrier for nuclear waste disposal at high temperature'. External examiner. *School of Civil Engineering, Technical University of Catalonia (UPC)*. Barcelona, Spain. Sep. 2010.
- **Lakshmikantha, M. R.** PhD thesis title: 'Experimental and theoretical analysis of cracking in drying soils'. External examiner. *School of Civil Engineering Technical, University of Catalonia (UPC*). Barcelona, Spain. Apr. 2009
- **Francesco Cecinato**. PhD thesis title: 'Thermo-poro-mechanical modelling of large-scale landslides'. External examiner. *School of Civil Engineering, University of Southampton UK*. Marc. 2009.
- **Sérgio Lourenço** PhD thesis title: 'Suction measurements and water retention in unsaturated soils'. External examiner. *Durham University*, Durham, UK. Aug. 2008.
- **Iván Rafael Berdugo De Moya.** PhD thesis title: 'Tunnelling in sulphate-bearing rocks – expansive phenomena'. External reviewer. Technical University of Catalonia, Spain. Dec. 2007.
- **Salvatore Castagna.** PhD thesis title: 'Thermo Hydraulic Behaviour of Unsaturated Salt Aggregates', External examiner. *School of Civil Engineering, Technical University of Catalonia (UPC*). Barcelona, Spain. May 2007.

- **Liange Zheng.** PhD thesis title: 'Coupled Thermo-Hydro-Mechanical-Geochemical modes for deformed structured porous media'. External examiner. *University of La Coruña,* A Coruña, Spain. Nov. 2006.
- **Dorival Pedroso.** PhD thesis title: 'Mathematical representation of the mechanical cyclic behaviour of saturated and unsaturated soils'. *University of Brasilia,* Brasilia, Brazil. Sep. 2006.

PROFESSIONAL SERVICE

- Chairman of the Technical Committee TC308 "Energy Geotechnics". *International Society for Soil Mechanics and Geotechnical* (ISSMGE). Sep. 2013 to present.
- Member of the Unsaturated Soils Committee. *American Society of Civil Engineers* (ASCE). Jan. 2010 to present.
- Member of the Soil Properties and Modeling Committee. *American Society of Civil Engineers* (ASCE). Mar. 2011 to present.
- Member of the *American Geophysical Union* (AGU). Jul. 2010 to present.
- Member of the *American Rock Mechanics Association* (ARMA). May 2013 to present.
- Invited instructor by "Plaxis bv" (http://www.plaxis.nl/) for the "Summer Plaxis Advanced Course on Computational Geotechnics". New York, 27th to 29th Jun, 2012.
- Invited instructor by "Plaxis bv" (http://www.plaxis.nl/) for the "Plaxis Advanced Course on Computational Geotechnics". Houston, Texas, 7th to 8th October, 2014

CONFERENCE ORGANIZER, COMMITTEE SERVICE AND SESSION CHAIR

- **Conference/Symposium organizer**
  1. Symposium on "*Energy Geotechnics*", SEG2015. Barcelona, Spain, 1st to 3rd Jun. 2015. Co-organizer in collaboration with Drs. Enrique Romero, Antonio Gens and Sebastia Olivella.
  2. 1st International Conference on Geo-Energy & Geo-Environment. 4th to 5th December 2015, Hong Kong University of Science and Technology (HKUST). Member of the Organizing Committee.
- **Session organizer**
  1. Co-organizer of the Technical Session: "Clay barriers performance in the long-term isolation of waste: thermal, hydro-mechanical and chemical interactions". *16th International Clay Conference (ICC),* Granada, Spain. Granada 16th to 21st Jul 2017. Organizers: Jaime Cuevas (Autonomous Univ. of Madrid, Spain), Maria Victoria Villar (CIEMAT, Madrid, Spain), and **Marcelo Sanchez**
  2. Co-convener of the session: "Session ID 12884: Hydrate bearing sediments: characterization, modeling, and thermal, hydrological, and geomechanical behavior". *American Geophysical Union Fall 2016 Meeting*, Dec. 2016, San Francisco, California. Conveners: Jeen-Shang Lin (Univ. of Pittsburgh), Yongkoo Seol (NETL, DOE), **Marcelo Sanchez** and Steve Phillips (The Univ. of Texas, Austin).
  3. Co-organizer of the Mini-Symposium: "Geomechanical characterization and modeling of hydrate bearing sediments". *1st International Conference on Energy Geotechnics*. Kiel, Germany. 29th to 31st Aug. 2016. Organizers **Marcelo Sanchez** and Christian Deusner.

4. Co-organizer of the Technical Session B21: "Energy Geotechnics". *2016 Geo-Chicago: Sustainability, Energy, and the Geoenvironment*. August 14th to 18th, 2016. Organizers: Marcelo Sanchez Xinbao Yu (Univ. of Texas at Arlington).
5. Co-organizer of the Technical Session: "Effect of Desiccation Cracking on Geo-structures", *2016 ASCE Geotechnical and Structural Engineering Conference*. Phoenix, Arizona. 14th to 17th Feb. 2016. Organizers: **Marcelo Sanchez**, Gerald Miller (Univ. of Oklahoma).
6. Co-organizer of the Technical Session: "Soil-structure Interaction for Energy Geo-structures", *ASCE Geotechnical and Structural Engineering Conference*. Phoenix, Arizona. 14th to 17th Feb. 2016. Organizers: Sherif Abdelaziz (Stony Brook Univ.). **Marcelo Sanchez**
7. Co-convener of the session: "Session ID 7432: Hydrate bearing sediments: characterization, modeling and implications on geohazard and gas production". *American Geophysical Union Fall 2015 Meeting*, Dec. 2015, San Francisco, California. Conveners: Jeen-Shang Lin (Univ. of Pittsburgh), Yongkoo Seol (NETL, DOE), Timothy Kneafsey (Berkeley National Lab), and **Marcelo Sanchez**
8. Co-organizer of the Minisymposium: "Multiphysical Modeling of Geomaterials". *13th US National Congress on Computation Mechanics*. San Diego, California, 26th to 30th Jul. 2015. Session organized in collaboration with Drs. WaiChing Sun, Qiushi, Chen and Craig Foster.
9. Co-organizer of the Track: "Geo-Engineering for Energy and Sustainability". *XV Pan-American Conference on Soil Mechanics and Geotechnical Engineering*. Buenos Aires, Argentina. 15th to 18th Nov. 2015. Track Coordinator. Track consists of three components: a Keynote Lecture, a Panel Session and two Technical Sessions. Organizers: **Marcelo Sanchez**, Guillermo Narsilio (The Univ. of Melbourne, Australia), Jose Alvarellos (Repsol Oil Company, Spain) and Leonardo Guimarães (Univ. Federal de Pernambuco, Brazil).
10. Co-convener of the session: "Session ID 1457: Hydrate bearing soils: characterization, modeling and geomechanical implications". *American Geophysical Union Fall 2014 Meeting*, Dec. 2014, San Francisco, California. Conveners: Jeen-Shang Lin (University of Pittsburgh), Yongkoo Seol (NETL, DOE), Timothy Kneafsey (Berkeley National Lab), and **Marcelo Sanchez**
11. Co-organizer of the Session: "Modeling Coupled Hydro-Mechanical-Thermal-Chemical Processes" *20th International Conference on Computational Methods in Water Resources* (CMWR 2014) Stuttgart, Germany (9th to 13th Jun., 2014). Organizers: **Marcelo Sanchez** and Carl Steefel (Lawrence Berkeley National Lab.)
12. Co-convener of the session: "MR012: Mudstone Multiphysics: Matrix to Fractures and Back Again". *American Geophysical Union Fall 2012 Meeting*, Dec. 2012, San Francisco, California. Conveners: Thomas Dewers (Sandia National Lab.), Jason Heath (Sandia National Lab.) Dr. Peter Eichhubl (Bureau of Economic Geology, Texas University), and **Marcelo Sanchez**.
13. Co-organizer of the Panel Session: "Impact of Desiccation Cracking and Tensile Strength on the Stability and Performance of Slopes and Embankments". *2013 Geo-Congress: Stability and Performance of Slopes and Embankments III*. San Diego, California. 3rd to 6th Mar. 2013. Organizers: **Marcelo Sanchez**, Louis Ge (National Taiwan Univ. of Science and Technology), Kuo-Hsin Yang (National Taiwan Univ. of Science and Technology) and Lyesse Laloui (Swiss Federal Institute of Technology).
14. Co-organizer of two Technical Sessions on "Impact of Desiccation Cracking and Tensile Strength on the Stability and Performance of Slopes and Embankments". *2013 Geo-Congress: Stability and Performance of Slopes and Embankments III*. San Diego, California 3rd to 6th Mar. 2013.

Organizers: **Marcelo Sanchez**, Louis Ge (National Taiwan Univ. of Science and Technology), Kuo-Hsin Yang (National Taiwan Univ. of Science and Technology) and Lyesse Laloui (Swiss Federal Institute of Technology).

- **International conferences. Committee service**

1. *The Second Pan American Conference on Unsaturated Soils*. Dallas/Fort Worth, Texas, USA. Geo-Institute - ASCE. Nov. 2017. Local Chair.
2. *Second International Symposium on Coupled Phenomena in Environmental Geotechnics* (*CPEG2*). University of Leeds, UK. September 6th and 7th, 2017. Member of the Symposium's Technical Advisory Committee.
3. *1st International Conference on Energy Geotechnics.* Kiel, Germany. 29th to 31st Aug. 2016. Member of the international advisory committee.
4. *16th European Conference on Unsaturated Soils*, E-UNSAT'16, Paris, France, 12th to 14th September 2016
5. *XV Pan-American Conference on Soil Mechanics and Geotechnical Engineering*. Buenos Aires. 15th to 18th Nov. 2015. Member of the international advisory committee.
6. *4th Unsaturated Soils: Research & Applications*. Sydney, Australia. 2nd to 4th Jul. 2014. Member of the international advisory committee
7. *1st Pan-American Conference on Unsaturated Soils*. Cartagena, Colombia, 20th to 22nd Feb. 2013. Member of the international advisory committee.
8. *2nd European Conference on Unsaturated Soils*. Naples, Italy. 20th to 22nd Jun. 2012. Member of the international advisory committee.
9. *5th International Conference on Unsaturated Soils*. Barcelona, Spain. 6th to 8th Sep. 2010. Member of the international advisory committee.
10. *5th Workshop New Frontiers on Computational Geotechnics.* Brisbane, Australia. 26th to 27th Jul. 2010. Member of the international advisory committee.
11. *4th Asian Pacific Conference on Unsaturated Soils*. Newcastle, Australia. 23rd to 25th Nov. 2009. Member of the international advisory committee.
12. *2nd International Workshop on Geotechnics of Soft Soils*. Glasgow UK. 3rd to 5th Sep. 2008. Member of the local organizing committee.
13. *1st European Conference on Unsaturated Soils*. Durham United Kingdom. 30th Jun. - 4th Jul. 2008. Member of the scientific committee.
14. *International Conference on Geotechnical and Highway Engineering*, GEOTROPIKA 2008. Kuala Lumpur, Malaysia. 25th to 28th May 2008. Member of the international advisory committee.

- **Session chairman and panelist**

1. Chairman of the Keynote Lecture "Analysis of the vertical deformation of energy pile groups" delivered by Prof. Lyesse Laloui. Kiel, Germany. 29th to 31st Aug. 2016.
2. Chairman of the Keynote Lecture "Subsurface energy storage: determining impacts of heat or gas storage in the subsurface" delivered by Prof. y Sebastian Bauer. Kiel, Germany. 29th to 31st Aug. 2016.
3. Co-moderator Technical Session: "Effect of Desiccation Cracking on Geo-structures", 2016 ASCE Geotechnical and Structural Engineering Conference. Phoenix, Arizona. 14th to 17th Feb. 2016.
4. Co-moderator Technical Session: "Soil-structure Interaction for Energy Geo-structures", ASCE Geotechnical and Structural Engineering Conference. Phoenix, Arizona. 14th to 17th Feb. 2016.

5. Chairman "Session 1 on Energy Geotechnics". 1st International Conference on Geo-Energy and Geo-Environment (GeGe2015). 4th and 5th December, Hong Kong.
6. Chairman of the Panel Session: "Geo-Engineering for Energy and Sustainability". XV Pan-American Conference on Soil Mechanics and Geotechnical Engineering. Buenos Aires, Argentina. 15th to 18th Nov. 2015.
7. Invited Panelist, Research Workshop: 'Fossil-based Technologies for Energy'. Texas A&M Energy Institute. College Station, USA. 12th Jun. 2015
8. Moderator of the Panel Session 4 on "Gas Hydrate Sediments" Symposium on *Energy Geotechnics*", SEG2015. Barcelona, Spain, 1st to 3rd Jun. 2015.
9. Chairman of the "Joint Session TC215-TC308 on Session Energy Geoenvironmental Technology" at the 7th International Congress on Environmental Geotechnics (7ICEG). Melbourne, Australia (7th to 10th Nov. 2014).
10. Chairman of the Plenary Session on "Measuring stiffness of soils in situ". 14th International Conference of the International Association for Computer Methods and Advances in Geomechanics (14IACMAG), Kyoto, Japan (22nd to 25th Sept. 2014).
11. Invited Panelist at the mini-symposium on "Soil-Atmosphere Interaction". 14th International Conference of the International Association for Computer Methods and Advances in Geomechanics (14IACMAG), Kyoto, Japan (22nd to 25th Sept. 2014).
12. Chairman of the three sessions on "Modeling Coupled Hydro-Mechanical-Thermal-Chemical Processes" (Sessions 19). 20th International Conference on Computational Methods in Water Resources (CMWR 2014) Stuttgart, Germany (9th to 13th Jun., 2014).
13. Invited Panelist at the "Energy Geotechnique panel" hold during the *PGS Workshop on Energy Geotechnics*. Purdue University. 6th Apr. 2014.
14. Chairman of the Panel Session: "Impact of Desiccation Cracking and Tensile Strength on the Stability and Performance of Slopes and Embankments", which took place during the *2013 Geo-Congress: Stability and Performance of Slopes and Embankments III*. San Diego, California. 3rd to 6th Mar. 2013.
15. Chairman of a Technical Sessions on "Impact of Desiccation Cracking and Tensile Strength on the Stability and Performance of Slopes and Embankments"; which took place during the *2013 Geo-Congress: Stability and Performance of Slopes and Embankments III*. San Diego, California 3rd to 6th Mar. 2013.
16. Chairman of Session: "Coupled hydro-mechanical and chemical analysis of saturated and unsaturated soils and rock". *1st Pan-American Conference on Unsaturated Soils*. Cartagena, Colombia. Feb. 2013
17. Chairman of Session: "Environmental Geotechnics". *2nd European Conference on Unsaturated Soils*, Naples, Italy. Jul. 2012.
18. Chairman of Session: 'Mechanical Characterization'. *4th Asian Pacific Conference on Unsaturated Soils'*. Newcastle, Australia. Nov. 2009.
19. Chairman of Session 'Constitutive Modelling I'. *1st European Conference on Unsaturated Soils*. Durham Unites Kingdom, July 2008.
20. Co-Chairman of Session 03B: 'Hydration/Dehydration'. *ANDRA Symposium: Using Natural and Engineered Clay-based Barriers for the Containment of Radioactive Waste*. Tours, France. Marc. (2005).

21. Secretary of Session 6: 'Stability Analysis and Tunnels'. Discussion Leader: Prof. G.N. Pande. *International Workshop of Young Doctors in Geomechanics 2002*. Paris, France. Dec. 2002.

DEPARTMENT AND UNIVERSITY SERVICE

1. Faculty Advisor of the Texas A&M University Geo-Institute of ASCE. Aug. 2013 – present.
2. CEOB Reorganization Committee. Zachry Department of Civil Eng. Sep. 2016 – present.
3. Curriculum Committee. Zachry Department of Civil Engineering. Mar. 2015 – present.
4. Curriculum Transformation Team. Zachry Department of Civil Eng. Mar. 2015 – present.
5. Member of the search committee. Faculty Position in Construction Engineering. 2015-2016
6. Member of the search committee. Faculty Position in Geotechnical Engineering. 2014-2015
7. Center for Tectonophysics, TAMU. Associated faculty. Sep. 2011 to present.
8. Texas A&M Energy Institute. Faculty member. Oct. 2011 to present.

INTERNATIONAL JOURNAL EDITORIAL BOARD MEMBER

1. Editorial Board Member of the journal 'Computers and Geotechnics' *Elsevier.*
2. Editorial Board Member of the journal 'Journal of Geotechnical and Geoenvironmental Engineering ASCE'.
3. Editorial Board Member of the journal 'Journal of Geomechanics for Energy and the Environment' *Elsevier.*
4. Editorial Board Member of the journal 'Soils and Foundations'. (Japanese Geotechnical Society) *Elsevier*
5. Editorial Board Member of the 'Journal of Rock Mechanics and Geotechnical Engineering'. (Chinese Geotechnical Society). *Elsevier*
6. Editor for North America, 'Bulletin ISSMGE' (International Society for Soils Mechanics and Geotechnical Engineering).
7. Guest Editor Journal 'Environmental Geotechnics'. Special Issue 'Selected Papers XV Pan-American Conference on Soil Mechanics and Geotechnical Engineering'.
8. Guest Editor: 'Journal of Geomechanics for Energy and the Environment'. Special Issue 'Selected Papers Symposium on Energy Geotechnics, Barcelona, May 2015.

REVIEWER FOR TECHNICAL JOURNALS AND RESEARCH PROPOSALS

- **Journals**

1. International Journal for Numerical and Analytical Methods in Geomechanics.
2. Géotechnique.
3. Water Resources Research.
4. Computer and Geotechnics.
5. Canadian Geotechnical Journal.
6. Engineering Geology.
7. Physics and Chemistry of the Earth.
8. Applied Clay Science.
9. Annals of the Brazilian. Academy of Sciences.
10. Journal of Hydrology.
11. Journal of Structural Geology.

12. Boletín Geológico y Minero (Spain)
13. Journal of Contaminant Hydrology.
14. Geotechnical Testing Journal
15. Soils and Foundations
16. Journal of Geotechnical and Geoenvironmental Engineering
17. Journal of Materials in Civil Engineering
18. Proceeding of the Royal Society (UK)
19. Journal of Testing and Evaluation
20. Journal of Performance of Constructed Facilities
21. International Journal of Rock Mechanics and Mining Sciences.
22. Géotechnique Letters.
23. Environmental Geotechnics.
24. Computers & Geosciences
25. Journal of Engineering Mechanics
26. Journal of Geotechnical and Geological Engineering
27. International Journal of Geomechanics
28. The Journal of Unconventional Oil and Gas Resources
29. Geotextiles & Geomembranes
30. Journal of Waterway, Port, Coastal, and Ocean Engineering
31. Marine Structures
32. Rock Mechanics and Rock Engineering

- **Proposals**

1. NSF: Hydrologic Sciences Program. Proposal reviewer, 2014.
2. NSF: Geomechanics and Geomaterials Program. Proposal reviewer, 2015.
3. NSF: Geomechanics and Geomaterials Program. Proposal reviewer, 2013.
4. DOE: Nuclear Energy University Programs (NEUP). Proposal reviewer, 2013.
5. NSF: Geomechanics and Geomaterials Program. Panelist, 2013.
6. NSF: Geomechanics and Geomaterials Program. Proposal Reviewer, 2012.
7. NSF: Graduate Research Fellowship Program (GRFP). Panelist, 2012.
8. DOE: Office of Basic Energy Sciences. Geosciences Research Program. Proposal Reviewer, 2011.
9. DOE: Nuclear Energy University Programs (NEUP). Proposal reviewer, 2011.
10. The Leverhulme Trust, UK. Proposal reviewer (1 proposal), February 2011.
11. Dutch Technology Foundation (STW). The Netherlands.

OTHER ACTIVITIES

- **Instructor of Pre-Congress Courses**
  1. 'Advance course on coupled multiphysics analysis in geo-engineering'. XV Pan-American Conf. on Soil Mechanics and Geotechnical Engineering. Buenos Aires, Argentina. 15th Nov. 2015.
- **Guest Lectures**
  1. National University of San Juan, Argentina (18/08/2016).
  2. Pontifical University of Chile, Chile (10/08/2016).
  3. King Saud University, Riyadh, Kingdom of Saudi Arabia (11/02/2016).

4. National University of San Juan, Argentina (11/13/2015).
5. The University of Texas at Austin, Austin, USA (10/30/2015)
6. École Polytechnique Fédérale de Lausanne (EPFL), Switzerland (08/13/2015) and (08/27/2015).
7. Cambridge University, Cambridge, UK (10/09/2015).
8. Northwestern University, Evanston, USA (12/2014).
9. Australian Geomechanics Society, Melbourne, Australia (07/2014).
10. Monash University, Melbourne, Melbourne, Australia (07/2014)
11. University of Pittsburgh, Pittsburgh, USA. (01/24/2014)
12. Universidade Federal de Pernanbuco, Recife-Brazil (05/2013)
13. Universidade Estadual Paulista Bauru, Brazil. (05/2013)
14. Sandia National Laboratories, Albuquerque-US (01/2012) and (10/2012)
15. University of Texas at San Antonio (02/2011)
16. Sandia National Laboratories, Albuquerque-US (01/2011)
17. Universidade Federal de Pernanbuco, Recife-Brazil (08/2010)
18. Lawrence Berkeley National Laboratory, San Francisco-US (06/2010)
19. The University of Western Australia, Perth-Australia (11/2009)
20. University of Glasgow, Glasgow-UK (11/08)
21. Universidade Federal de Pernanbuco, Recife-Brazil (07/2008)
22. Massachusetts Institute of Technology (MIT), Boston-US (03/2008)
23. Universidade Federal de Pernanbuco, Recife-Brazil (08/2007)
24. Universidade de Brasilia, Brazilia-Brazil (06/2007)
25. University of Strathclyde, Glasgow (02/2007)
26. Durham University, Durham-UK (11/2006)
27. National Univ. of Tucuman, Tucuman- Argentina (10/07/2006)
28. Tongji University, Shanghai-China (05/2006)
29. Institut Teknologi Sepuluh Nopember (ITS), Surabaya-Indonesia. (03/2006)
30. University Teknologi Malaysa, Johor Darul Ta'Zim- Malaysia (03/2006)

- **Goizueta Visiting Professor,** Georgia Institute of Technology, Atlanta, USA: May 2009 (1 week); Apr 2008 (1 week).
- **Short course on "Modeling of coupled THM problems"**. Georgia Institute of Technology. Nov 2007 (1 week).
- **Visiting lecturer** ITS, Surabaya, Indonesia (03/2006; 2 weeks)
- **Media coverage.** On Jan 6th 2016, KBTX requested Dr. Sanchez's opinion as part of the article entitled: 'Lake Bryan Dam Repairs Continue After Sensors Detect Slight Movement'. Report and video can be found at: http://www.kbtx.com/home/headlines/Lake-Bryan-Dam-Repairs-Continue-After-Sensors-Detect-Slight-Movement-364307311.html
- **Coordinator/Editor** of the article 'TAMU Geotechnical Engineering and Geomechanics Group - Research Highlights' *Bulletin of the International Society for Soil Mechanics and Geotechnical Engineering*. V 9 (3), Pp 35. Jun 2015. Report can be found at http://issmge2014.ust.hk/~issmge/jun2015/1.Research_highlights.pdf

FELLOWSHIPS

- 2014 ASCE ExCEEd Fellow. The ASCE's (American Society of Civil Engineering) Committee on Faculty Development selected Dr. Sánchez to attend the six-day 2014 ASCE ExCEEd (Excellence in Civil Engineering Education) Teaching Workshop at the Florida Gulf Coast University, June 22-27, 2014.
- Research fellowship CIMNE (UPC). January 2001 – May 2005.
- Doctoral scholarship MUTIS program, AECI (Spanish Agency of International Cooperation). January 1998 – December 2000.
- FOMEC program, Ministry of Education, Argentina. Scholarship to undertake the Master Course at UPC, Barcelona, Spain. January-December 1996.
- Scholarship to attend the "XII International Course of Soil Mechanics and Engineering in Foundations". Madrid, Spain. January-May 1994. ICI program (AECI, Spain).

PUBLICATIONS

* indicates past or present graduate students, ** indicate past or present postdoctoral researchers.

I JOURNAL PUBLICATIONS

- ***PUBLISHED – ACCEPTED***

1. *Lloret M., Wheeler S., and **Sánchez M.** "Experimental validation and determination of parameter values for a coupled mechanical and water retention model for unsaturated soils". Acta Geotechnica (accepted).
2. **Sánchez M.,** Flacao F., Mack M., Pereira J-M., Narsilio G., Guimarães L. (2016). "Salient Comments and Discussions from a Geo-Energy Panel". Environment Geotechnics (accepted).
3. *Pereira L., **Sánchez M**, Guimarães L. "Uncertainty Quantification for Reservoir Geomechanics" *Geomechanics for Energy and the Environment* (accepted).
4. *Gai X., **Sánchez M**. (2016). "Mechanical Modeling of Gas Hydrate Bearing Sediments Using an Elasto-Plastic Framework. *Environmental Geotechnics* (accepted).
5. **Sánchez M**., Romero E. (2016). "Themed Issue on Selected papers SEG2015". Editorial introduction special issue. Geomechanics *for Energy and the Environment* (accepted).
6. **Sánchez M**., Gens A., Villar MV and Olivella S. (2016). "A Truly Coupled THM Formulation for Double Porosity Unsaturated Soils". *International Journal of Geomechanics. ASCE.* D4016015-1. DOI: 10.1061/(ASCE)GM.1943-5622.0000728.
7. Narsilio G. **Sánchez M**., Guimarães L. Alvarellos, J. (2016). "Themed issue on XV Pan-American Conference: Selected papers on energy geotechnics". Editorial introduction special issue. *Environment Geotechnics*. (Accepted).
8. **Sánchez M**, Arson C., Gens A. *Aponte F. (2016). "Analysis of Unsaturated Materials Hydration Incorporating the Effect of Thermo-Osmotic Flow". *Geomechanics for Energy and the Environment.* (Accepted).
9. McCartney J., **Sánchez M**., Tomac I. (2016). "Energy Geotechnics: Advances in Subsurface Energy Recovery, Storage, Exchange, and Waste Management". *Computers and Geotechnics.* doi:10.1016/j.compgeo.2016.01.002.
10. Onza F. Wheeler S., Gallipoli D., Barrera-Bucio M., Hofmann M., *Lloret-Cabot M., Lloret

Morancho A., Mancuso C., PereiraJ-M., Romero-Morales E., **Sánchez M**., Solowski W., Tarantino A., Toll D., Vassallo R. (2015). Benchmarking Selection of Parameter Values for the Barcelona Basic Model. Technical Note. *Engineering Geology*, 196:99–118. doi:10.1016/j.enggeo.2015.06.022

11. *Akrouch G., **Sánchez M**., and Briaud, J-L. (2016). "An Experimental Analytical and Experimental Study on the Thermal Efficiency of Energy Piles in Unsaturated Soils". *Computers and Geotechnics*, 71: 207–220. doi:10.1016/j.compgeo.2015.08.009.
12. *Le T., Gallipoli D., **Sánchez M**., and Wheeler J. (2015). "Stability and failure mass of unsaturated heterogeneous slopes". *Canadian Geotechnical Journal*. 52:1747–1761. dx.doi.org/10.1139/cgj-2014-0190
13. *Akrouch G., Briaud, J-L., **Sánchez M**. and Yilmaz R. (2015) "Thermal Cone Test to Determine Soil Thermal Properties". *Journal of Geotechnical and Geoenvironmental Engineering* 10.1061/(ASCE) GT.1943-5606.0001353, 04015085
14. **Sánchez M**., *Wang D., Briaud J-L, and Douglas C. (2014). "Typical Geomechanical Problems Associated with Railroads on Shrink-swell soils". *Transportation Geotechnics*.1:257-274 DOI: 10.1016/j.trgeo.2014.07.002.
15. *Le T., **Sánchez M.,** Gallipoli D., Wheeler J. (2015). "Probabilistic modelling of auto-correlation characteristics of heterogeneous slopes". *Geomechanics and Geoengineering: An International Journal*. 10(2):95-108. DOI: 10.1080/17486025.2014.933890.
16. **Sánchez M**., Manzoli O, and Guimarães L. (2014). "Modeling 3-D Desiccation Soil Crack Networks Using a Mesh Fragmentation Technique". *Computers and Geotechnics*. 62: 27–39. DOI: 10.1016/j.compgeo.2014.06.009.
17. *El Mountassir G., **Sánchez M.**, and Romero E. (2014). "An experimental study on the compaction and collapsible behaviour of a flood defence embankment fill". *Engineering Geology* 179: 132–145. DOI: 10.1016/j.enggeo.2014.06.023.
18. **Sánchez M.,** *Shastri A., and *Le T. (2014). "Coupled Hydro-Mechanical Analysis of an Underground Compressed Air Energy Storage Facility in Sandstone". *Géotechnique letters*. 4:157–164. DOI: 10.1680/geolett.13.00068
19. *Lloret M., Wheeler S., and **Sánchez M**. (2014) "Unification of plastic compression in a coupled mechanical and water retention model for unsaturated soils". Technical note *Canadian Geotechnical Journal*. Published online. DOI: 10.1139/cgj-2013-0360
20. *Akrouch G., **Sánchez M**., and Briaud, J-L. (2014). "Thermo-Mechanical Behavior of Energy Piles in High Plasticity Clays". *Acta Geotechnica*. 9:399–412. DOI: 10.1007/s11440-014-0312-5.
21. **Zielinski M., **Sanchez M**., Romero E. and *Atique A., (2014). Precise Observation of Soil Curling". *Geoderma*. 226–227 (2014) 85–93. DOI: 10.1007/s11440-014-0312-5.
22. *Cabral L., Guimarães L, Horowitz B. and **Sánchez M.** (2014). "Coupled Hydro-Mechanical Fault Reactivation Analysis Incorporating Evidence Theory for Uncertainty Quantification". *Computers and Geotechnics* 56: 202–215. DOI: 10.1016/j.compgeo.2013.12.007
23. **Sánchez M**., *Atique A., *Kim S., Romero E., and **Zielinski M (2013). "Exploring Desiccation Cracks in Soils using a 2-D Profile Laser Device" *Acta Geotechnica*. 8 (6): 583-596. DOI 10.1007/s11440-013-0272-1
24. Gens A, Vallejan B, Zandarína M. and **Sánchez M** (2013). "Homogenization in clay barriers and seals: Two case studies". *Journal of Rock Mechanics and Geotechnical Engineering*. 5 (3): 191–199. DOI: 10.1016/j.jrmge.2013.04.003.

25. *Le T., Gallipoli D., **Sánchez M**., and Wheeler J. (2013). "Rainfall-induced differential settlements of shallow foundations on heterogeneous unsaturated soils". *Géotechnique*. 63 (15): 1346 –1355. DOI 10.1680/geot.12.P.181
26. *Lloret M., **Sánchez M.** and Wheeler S. (2013). "Formulation of a 3-D Constitutive Model for Unsaturated Soils Incorporating Mechanical-Water Retention Couplings". *International Journal for Numerical and Analytical Methods in Geomechanics*. 3 37: 3008–3035. DOI: 10.1002/nag.2176
27. Guimarães L., Gens A., **Sánchez M**., and Olivella S. (2013). "A chemo-mechanical constitutive model accounting for cation exchange in expansive clays". *Géotechnique*. 63(3): 221 –234. DOI: 10.1680/geot.SIP13.P.012.
28. **Sánchez M**. and Roesset J. (2013). "Evaluation of Models for laterally loaded piles". Technical Communication. *Computers and Geotechnics.* 48: 16–320.
29. **Sánchez M**., Gens A. and Guimarães L. (2013). "Thermal–hydraulic–mechanical (THM) behaviour of a large-scale in situ heating experiment during cooling and dismantling". *Canadian Geotechnical Journal*. 49: 1169–1195. doi:10.1139/T2012-076. *Paper distinguished with an 'Editor Choice' for 2012.*
30. **Sánchez M**., *El Mountassir G., and Romero E. (2012). "Study of compacted fills used in the construction of levees in Indoneisa" (in Spanish). *Rev. Int. de Desastres Naturales, Accidentes e Infraestructura Civil*. 12(1) 91.
31. **Sánchez M**., Gens A. and Olivella S (2012). "Thermo-Hydro-Mechanical Analysis of a Large Scale Heating Test incorporating material fabric changes". *International Journal for Numerical and Analytical Methods in Geomechanics*. 36 (4): 391–42. DOI: 10.1002/nag.1011.
32. *Le T., Gallipoli D., **Sánchez M**., and Wheeler J. (2011). "Stochastic Analysis of unsaturated seepage through randomly heterogeneous earth embankments". *International Journal for Numerical and Analytical Methods in Geomechanics*. 36 (8):1056–1076. DOI: 10.1002/nag.1047
33. *El Mountassir G., **Sánchez M.**, Romero E. and Soemitro R. (2011). "Behavior of a compacted fill used to construct flood embankments". *Geotechnical Engineering, ICE*. 164 (3): 195 –210. DOI: 10.1680/geng.10.00055.
34. **Zielinski M., **Sánchez M.**, Romero E. and Sentenac P. (2011). "Assessment of water retention behavior in compacted fills". *Geotechnical Engineering, ICE*. 164 (2): 139-148. DOI: 10.1680/geng.2011.164.2.139.
35. Gens A, Vallejan B, **Sánchez** M, Imbert C, Villar MV, and Van Geet M. (2011). "Hydromechanical behaviour of a heterogeneous compacted soil: experimental observations and modeling". *Géotechnique*. 61(5): 367 –386. DOI: 10.1680/geot.SIP11.P.015. *Paper distinguished by the ICE (Institution of Civil Engineers) with the prestigious 'George Stephenson Medal 2012'.*
36. Kim J-S., Kwon S-K., **Sánchez M**. and Cho H-Ch (2011). "Geological Storage of High Level Nuclear Waste". *KSCE Journal of Civil Engineering*. Invited paper, special issue: "Energy Geotechnology". 15(4): 721-738.
37. Gens A., Guimarães L. Olivella S., and **Sánchez M.** (2010). "Modelling thermo-hydro-mechano-chemical interactions for nuclear waste disposal". *Journal of Rock Mechanics and Geotechnical Engineering*. 2 (2): 97–102. DOI: 10.3724/SP.J.1235.2010.00097
38. **Sánchez M**, Gens A. and Olivella S (2010). "Effect of thermo-coupled processes on the behavior of a clay barrier submitted to heating and hydration". *Annals of the Braz. Acad. of Sciences*. 82(1):153-68. ISSN 0001-3765.

39. Gens A., **Sánchez M**., Guimarães L., Lloret A., Olivella S. and Alonso E. (2009). "A full scale in situ heating test for high level nuclear waste disposal. Observations, analysis and interpretation". *Géotechnique*. 59 (4): 377–399. DOI: 10.1680/geot.2009.59.4.377.
40. Åkesson M, Jacinto A, Gatabin C., **Sánchez M** and Ledesma A. (2009). "Bentonite THM behaviour under high temperature gradients: Experimental and numerical analysis". *Géotechnique*. 59 (4): 307–318. DOI: 10.1680/geot.2009.59.4.307.
41. **Sánchez M**., Gens A. and Olivella S. (2008). "Implementation algorithm of a generalized plasticity model for swelling clays". *Computers and Geotechnics.* 35 (6): 860-871. DOI:10.1016/j.compgeo.2008.08.004.
42. Villar M.V., **Sánchez M**. and Gens A. (2008). "Behaviour of a bentonite barrier in the laboratory: Experimental results up to 8 years and numerical simulation". *Physics and Chemistry of the Earth.* 33: S476-S485. DOI:10.1016/j.pce.2008.10.055
43. Rodríguez R., **Sánchez M.**, Lloret A. and Ledesma A. (2007). "Experimental and numerical analysis of a mining waste desiccation". *Canadian Geotechnical Journal*. 44: 644-658. DOI: 10.1139/T07-016.
44. Guimarães L, Gens A, **Sánchez M.** and Olivella S. (2006). "THM and reactive transport analysis of expansive clay barrier in radioactive waste isolation". *Communications in Numerical Methods in Engineering*. 22 (8): 849–859. DOI: 10.1002/cnm.852.
45. Gens A., **Sánchez M**., and Sheng, D. (2006). "On constitutive modelling of unsaturated soils". Review Paper. *Acta Geotechnica*. 1(3) 137-147. DOI: 10.1007/s11440-006-0013-9.
46. **Sánchez M.**, Gens A., Guimarães L. and Olivella S. (2005). "A double structure generalized plasticity model for expansive materials". *International Journal for Numerical and Analytical Methods in Geomechanics*. 29: 751–787. DOI: 10.1002/nag.434.
47. **Sánchez M**., Gens A. and Olivella S. (2004) "Coupled analysis of engineered barriers". Mecanica Computacional. ISSN 1666-6070
48. Lloret A., Villar M.V., **Sánchez M.**, Gens A., Pintado X. and Alonso E.E. (2003). "Mechanical behaviour of heavily compacted bentonite under high suction changes". *Géotechnique*. 53 (1): 27-40.

- ***UNDER REVIEW***

1. **Sánchez M.,** *Gai X., Santamarina J.C. "A Constitutive Mechanical Model for Gas Hydrate Bearing Sediments Incorporating Inelastic Mechanisms". *Computers and Geotechnics* (under review).
2. *Pereira L., **Sánchez M**, Guimarães L., Santos E., Horowitz B. "Defining Maximum Injection Pressures in an Offshore Petroleum Reservoir Using the Evidence Theory for Uncertainty Quantification". *Journal of Petroleum Science and Engineering* (under review).

II BOOK CHAPTERS AND MONOGRAPHS

- ***PUBLISHED – ACCEPTED***

1. Wuttkle F, Bauer S. and Sanchez M. Editors: "Energy Geotechnics" - Proceedings of the 1st International Conference on Energy Geotechnics. Kiel, Germany. 29th to 31st Aug. 2016. CRC Press/Balkema. ISBN 978-1-138-03299-6
2. *Akrouch G, **Sánchez M.** and Briaud JL. (2013). Chapter 9, Title: "Energy Geo-structures in Cooling-Dominated Climates". Book title: *Energy geo-structures: innovation in underground*

engineering. Editor: Lyesse Laloui and Alice Di Donna. Publisher *Wiley*. ISBN: 9781848215726. Pp:175-190.

3. Arson C.; Berns E., *Akrouch G., **Sánchez M**. and Briaud J-L. (2013). Chapter title: "Heat Propagation around Geothermal Piles and Implications on Energy Balance" Book title: *Materials and processes for energy: communicating current research and technological developments*. Editor: A. Méndez-Vilas. Publisher: Formatex Research Center. ISBN (13): 978-84-939843-7-3. Pp:628-635.
4. **Sánchez M.** and Gens A. (2006). "Full-scale Engineered Barriers Experiment". Final Report on Thermo-Hydro-Mechanical modelling. ENRESA Technical Publication, Madrid, 163 Pages. ISSN: 1134-380X. D.L.:M-53197-2006l
5. **Sánchez M.,** Co-author. Chapter 7 (2006). "Full-scale Engineered Barriers Experiment". Update Final Report. ENRESA Technical Publication, Madrid, 590 Pages. ISSN: 1134-380X. D.L.:M-53195-2006.
6. **Sánchez M.,** Co-author. Chapter 6 (2000). "Full-scale Engineered Barriers Experiment for a deep geological repository for high level radioactive waste in crystalline rock. ENRESA Technical Publication, Madrid, 350 Pages. ISSN: 1134-380X. D.L.:M-14403-2000.

III KEYNOTE AND INVITED CONFERENCE PRESENTATIONS AND PAPERS

Underline indicates the speaker

1. **Sánchez M.** (2018). General Report. *7th Int. Conference on Unsaturated Soils*. Invited Speaker. Hong Kong Univ. of Science and Technology, Hong Kong. 3rd to 5th Aug. 2018. (upcoming)
2. **Sánchez M.** (2016). "Behavior of Hydrates Bearing Sediments". Keynote lecture *1st International Conference on Energy Geotechnics*. Kiel, Germany. 29th to 31st Aug. 2016.
3. **Sánchez M.** (2016). "Creep Behavior in Soil Nail Walls in High Plasticity Index (PI) Soil". Invited presentation: *Texas Department of Transportation (TxDOT) Spring 2016 Research Meeting*. Texas Department of Transportation, Austin, 22nd Mar. 2016. (Presentation only)
4. **Sánchez M.** (2016). "Soil Nail Walls in High Plasticity Clays". Invited lecture: *Geo-San Antonio 2016 - Geotechnical Advances in the Transportation Sector*. Organized by the Geo-Institute Texas and San Antonio Chapters. The Universidad of Texas at San Antonio, 18th Mar. 2016. (Presentation only)
5. **Sánchez M.,** *Kim S., Manzoli O, and Guimarães L., **Zielinski M., *Atique A., and Romero E. (2015). "Drying cracks in soils: current advances and challenges". Keynote lecture: *VII Simposio Brasileiro de Solos Nao Saturados*, Fortaleza, Brazil, 25th to 27th Nov. 2015.
6. **Sánchez M**. (2015). Keynote lecture: "The role of a Civil Engineering in Problems related to Geo-Environmental and Geo-Energy Engineering". CONEIC 8th Conference. 9th Oct. 2015. San Juan Argentina. (Abstract only).
7. **Sánchez M**. (2015). "Engineered barriers". 7th Olek Zienkiewicz Course Summer School of ALERT Geomaterials on "Unsaturated Soil Mechanics: From Fundamentals to Applications". Universitat Politècnica de Catalunya, Barcelona-Tech, 26th to 29th May 2015. (Abstract only).
8. *Akrouch G, Briaud J.L. and **Sánchez M**. (2014). "Energy Piles in Cooling Dominated Climate". Invited lecture: *7th International Congress on Environmental Geotechnics*. Melbourne, Australia. 10th to 14th Nov. 2014.
9. **Sánchez M.,** *Akrouch G., and Briaud JL. (2014). "Geothermal Energy in Texas". Invited

lecture: *Texas CECON (Civil Engineering Conference) 2014, ASCE Texas Section.* September 17-19, 2014, San Luis Resort, Galveston, Texas. (Presentation only)

10. **Sánchez M.,** *Akrouch G., and Briaud JL. (2014). "Energy Piles in Cooling Dominated Climates". Invited lecture: *Geo-San Antonio 2014 - Geotechnical Topics in the Energy Sector*. Organized by the Geo-Institute Texas and San Antonio Chapters. The Universidad of Texas at San Antonio, 14th Mar. 2014. (Presentation only)
11. **Sánchez M.** (2013). "Estimation of the Maximum Injection Pressure Using Evidence Theory in Coupled Hydro-Mechanical Problems Involving Geological Faults". Invited lecture: *IV International Seminar on Oilfield Water Management*, Rio de Janeiro, Brazil. 28th to 30th Aug. 2013. (Abstract only).
12. **Sánchez M.** (2013). "Behavior of an Underground Compressed Air Energy Storage Facility in Sandstone". Invited lecture: *International Workshop Geo-engineering Energy Geo-Storage*, Weimar, Germany. 3rd to 5th Jul. 2013.
13. Gens A., **Sánchez M.** and Vallejan B. (2011). "Generalized Plasticity for Geomaterials with Double Structure" Keynote lecture: *International Conference on Computational Plasticity* – COMPLAS XI, Barcelona, Spain, 7th to 9th Sep. 2011. (Abstract only).
14. Guimarães L., Gens A, **Sánchez M**. and Olivella S. (2009). "Coupled THMC modelling of unsaturated swelling clays: constitutive formulation and boundary value problems". Keynote paper: *4th Asian Pacific Conference on Unsaturated Soils*, Newcastle, Australia. 23rd to 25th Nov. 2009.
15. Gens A., Guimaraes L., **Sánchez M.** and Sheng D. (2008). "Developments and modelling the generalised behaviour of unsaturated soils". Keynote lecture: *1st E-UNSAT,* Durham, UK. 2nd to 4th Jul. 2008.
16. **Sánchez M.** (2007) "Behavior of expansive clays subjected to heating and hydration". Invited lecture: *IUTAM (International Union of Theoretical and Applied Mechanics) Symposium on Swelling and Shrinking of Porous Materials From Colloid Science to Poromechanics*, Rio de Janeiro, Brazil. 6th to 10th Aug. 2007.
17. **Sánchez M.**, Villar M.V., Lloret A. and Gens A. (2007). "Analysis of the expansive clay hydration under low hydraulic gradient". Keynote lecture: *International Conference: Mechanics of Unsaturated Soils*, Weimar, Germany. 7th to 9th Mar. 2007.
18. **Sánchez M.,** Gens A., Guimarães L. and Olivella S. (2007) "A generalised plasticity model for swelling clays: formulation, implementation and validation". Invited lecture: *International Workshop on Constitutive modelling – Development, Implementation, Evaluation, and Application.* Hong Kong, China. 12th to 13th Jan. 2007.
19. **Sánchez M.** (2006) "Coupled analysis of engineered barriers". Keynote lecture: *XVIII CAMSIG. Argentinean Congress of Soil Mechanics and Geotechnical Engineering*, San Juan, Argentina. 27th to 30th Sep. 2006.
20. **Sánchez M.,** Gens A Guimarães L. and Olivella S. (2006) "Modelling coupled behaviour of a clay barrier at high temperatures". Invited lecturer: *2nd International Conference on Coupled T-H-M-C Processes in Geo-systems: Fundamentals, Modelling, Experiments & Applications*, Nanjing, China. 22-24 May, 2006.
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Computational Plasticity VII. Fundamentals and Applications. Barcelona, Spain. April, 2002. ISBN 84-95999-226.

22. Gens A., Olivella S., **Sánchez M**. (2002). "Thermo-hydromechanical effects on the behaviour of clay barriers". Invited lecture: *International meeting on Clays in Natural and Engineered Barriers for radioactive waste confinement*, Reims, France. December, 2002.

IV PEER REVIEWED CONFERENCES PAPERS

1. *Dong W., **Sánchez M**., Briaud J-L (2016) "Behavior of Railroads on Shrink-Swell Soils". 3rd European Conference on Unsaturated Soils, Paris, France, 12th to 14th Sep. 2016
2. **Sánchez M**., Falcao F., Mack M. Pereira J-M (2015) "Panel Session on Energy Geo-Engineering". *XV Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Buenos Aires, Argentina 15th to 18th Nov. 2015.
3. *Dong W., **Sánchez M**., Briaud J-L (2015) "Problems Associated with Railroads on Shrink-Swell Soils". *XV Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Buenos Aires, Argentina 15th to 18th Nov. 2015.
4. *Gai X, **Sánchez M**. (2015). "Mechanical Modeling of Gas Hydrate Bearing Sediments Using an Elasto-Plastic Framework". *XV Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Buenos Aires, Argentina 15th to 18th Nov. 2015.
5. **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.
6. *Cabral L., Guimares L., **Sanchez M.** (2015). "Uncertainty quantification for reservoir geomechanics". *SPESPE Paper Contest 2015 - PHD category. Houston*, USA, 28th to 30th Sep. 2015
7. *Akrouch G., **Sánchez M**., and Briaud, J-L. (2015). "Effect of the Unsaturated Soil Condition on the Thermal Efficiency of Energy Piles". *International Foundations Congress and Equipment Expo 2015*, San Antonio, USA, 17th to 21st March 2015
8. **Sánchez M**., Manzoli O, and Guimarães L. (2014). "Modeling Drying Cracks in Soils Using a Mesh Fragmentation Method". *14th International Conference of the International Association for Computer Methods and Advances in Geomechanics*, 14th IACMAG. Kyoto, Japan. 22nd to 25th Sep. 2014.
9. **Sánchez M**., *Shastri A., Santamarina J.C. and *Gai X. (2014). "Coupled Modeling of Gas Hydrate Bearing Sediments". *14th International Conference of the International Association for Computer Methods and Advances in Geomechanics*, 14th IACMAG. Kyoto, Japan. 22nd to 25th Sep. 2014.
10. **Zielinski M., **Sánchez M**., Romero E., *Atique A. (2014). "Observation of soil curling using 2D laser scanner". *International Conference UNSAT2014*. Unsaturated Soils: Research & Applications, Sydney, Australia. 2nd to 4th Jul. 2014.
11. **Sánchez M**., Manzoli O, Guimarães O. (2014). "Modeling the Formation and Propagation of Desiccation Cracks in Soils". *International Conference UNSAT2014*. Unsaturated Soils: Research & Applications, Sydney, Australia. 2nd to 4th Jul. 2014.
12. *Le T, Gallipoli D, **Sánchez M**., Wheeler S. (2014). "Mechanisms of Rainfall Induced Differential Settlements in Unsaturated Heterogeneous Foundations". *International Conference UNSAT2014*. Unsaturated Soils: Research & Applications, Sydney, Australia. 2nd to 4th Jul. 2014.

13. Bai Y. Niedzwecki J., **Sánchez M.** (2014). "Numerical Investigation of Thermal Fields around Subsea Buried Pipelines". *Proceedings of the ASME 2014 33rd International Conference on Ocean, Offshore and Arctic Engineering* OMAE2014, San Francisco, California, US. 8th to 13th Jun. 2014.
14. *Shastri A., **Sánchez M.** (2014). "Numerical Modeling of Frozen Soils". *Geo-Congress 2014 ASCE*, Atlanta, US. 23rd to 26th Feb. 2014.
15. **Sánchez M**., Gens A., Guimarães L, *Dontha L. (2013). "Coupled THM analysis of a nuclear waste repository in crystalline rock". *47th US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA, US. 23rd to 26th Jun. 2013.
16. *Khandelwal S**., Sánchez M**., Medina-Cetina Z. (2013). "Effect of Depth of Desiccation Cracks on Earth Embankments". *Geo-Congress 2013 ASCE*, San Diego, US. 3rd to 6th Mar. 2013.
17. **Sánchez M**., *Atique A., *Kim S., Romero E., and Zielinski M. (2013). "Study of desiccation cracks in soils using a 2D laser scanner". *Geo-Congress 2013 ASCE*, San Diego, US. 3rd to 6th Mar. 2013.
18. *Shastri A., **Sánchez M**. and Lizcano A. (2013). "Unsaturated Flow of Unfrozen Water in Frozen Soils". *1st Pan-American Conference on Unsaturated Soils*, Cartagena, Colombia. 20th to 22nd Feb. 2013.
19. *Shastri A., **Sánchez M**. and Santamarina JC. (2013). "Modeling Gas Hydrate Bearing Sediments Using a Coupled Approach". *1st Pan-American Conference on Unsaturated Soils*; Cartagena, Colombia. 20th to 22nd Feb. 2013.
20. Bean J., **Sánchez M**. and Argüello J. G. (2012). "Application of a Double Structure Constitutive Model for Expansive Clays". *46th US Rock Mechanics/Geomechanics Symposium*, Chicago, IL, USA. 24th to 27th Jun. 2012.
21. *Shastri A., **Sánchez M.** (2012). "Mechanical Modeling of Frozen Soil Incorporating the Effect of Cryogenic Suction and Temperature". *Geo-Congress 2012 ASCE*. Oakland, California USA. 25th to 29th Mar. 2102.
22. *Lloret M., **Sánchez M**. and Wheeler S. (2012) "Generalisation to the 3D conditions of a fully coupled constitutive model for unsaturated soils". *Geo-Congress 2012 ASCE*, Oakland, California. 25th to 29th Mar. 2102.
23. *Shastri A., **Sánchez M.** (2012) "Modeling the Mechanical Behavior of Frozen Soils". *2nd European E-UNSAT 2012*, Naples, Italy, 20th to 22nd Jun. 2012.
24. **Sánchez M**., *Shastri A., and Gens A. (2011). "Transient behavior of a clay barrier subjected to high temperature changes". *Geo-Frontiers 2011 ASCE*. 13th to 16th Mar. 2011. Dallas, US.
25. Zielinski M., **Sánchez M**., Romero E. and Sentenac P. (2011). "Water Retention Behavior of an Embankment Model*". Geo-Frontiers 2011 ASCE*, Dallas, US. 13th to 16th Mar. 2011.
26. *Atique A., **Sánchez M**., and Romero (2011). "Analysis of Cracking Behavior of Drying Soil". *International Conference on Environmental Science and Technology-ICEST 2011,* Singapore, 24th to 28th Feb. 2011.
27. **Sánchez M**., Villar M.V., Gomez R., Lloret A. and Gens A. (2010). "Swelling pressure evolution in compacted bentonite: experiments and modeling". *5th International Conference on Unsaturated Soils,* Barcelona, Spain. 6th to 8th Sept. 2010.
28. *Le T., Gallipoli D., **Sánchez M**., Wheeler J. (2010). "Influences of spatially varying porosity on unsaturated flow through earth structures". *5th International Conference on Unsaturated Soils,* Barcelona, Spain. 6th to 8th Sep. 2010.

29. Zielinski M., Sentenac P., *Atique A., **Sánchez M.**, and Romero E. (2010). "Comparison of four methods for determining the soil water retention curve". *5th International Conference on Unsaturated Soils*, Barcelona, Spain. 6th to 8th Sep. 2010.
30. Gens A., Guimarães L, **Sánchez M**. and Vallejan B. (2010). "A coupled Analysis of Double Porosity Swelling Clays". *International Workshop on Multiscale and Multiphysics Processes in Geomechanics*, Stanford University Campus, US. 23rd to 25th Jun. 2010.
31. **Sánchez M**., Gens A., Villar M.V., and Lloret A. (2010). "Simulation of expansive clay behavior under simultaneous heating-hydration for nuclear waste storage applications". *GeoFlorida ASCE*, West Palm Beach, Florida, US. 20th to 24th Feb. 2009.
32. *Lloret M., **Sánchez M**. and Wheeler S. (2009). "Generalised elasto-plastic stress-strain and modified suction-degree of saturation relations of a fully coupled model". *4th Asia-Pacific Conference on Unsaturated Soils*, Newcastle, Australia. 23rd to 25th Nov. 2009.
33. *McCloskey G., **Sánchez M.**, and Romero E. (2009). "Characterization, mechanical and microstructural behaviour of an unsaturated silt". *4th Asia Pacific Conference on Unsaturated Soils*. Newcastle, Australia. 23rd to 25th Nov. 2009.
34. *Atique A., **Sánchez M.**, and Romero E. (2009). "Investigation of crack desiccation in soil from a flood protection embankment". *4th Asia-Pacific Conference on Unsaturated Soils*, Newcastle, Australia. 23rd to 25th Nov. 2009.
35. **Cordão-Neto M., **Sánchez M**., Karstunen M. and Farias M. (2009). "Extension of the Barcelona Basic Model Considering Sub-loading Concepts". *4th Asia-Pacific Conference on Unsaturated Soils*, Newcastle, Australia. 23rd to 25th Nov. 2009.
36. *Lloret M., **Sánchez M**., Wheeler S. and Karstunen M. (2009). "A generalised fully coupled mechanical-water retention model for unsaturated soils". *1st International Symposium on Computational Geomechanics* ComGeo I, Juan-les-Pins, Cote d'Azur, France. April 29th to May 1st 2009.
37. **Cordão-Neto M., **Sánchez M**. and Karstunen M. (2009). "A Constitutive Model for Structured Anisotropic Soils". *1st International Symposium on Computational Geomechanics* ComGeo I, Juan-les-Pins, Cote d'Azur, France. April 29th to May 1st 2009.
38. Villar MV, **Sánchez M**, Gómez-Espina R, Gens A. 2008. "NF-PROC3: Experimental and Modelling Studies of the THM Behaviour of the Clay Barrier". *Euradwaste 2008*. Euradwaste '08. Programme and abstracts. European Commission. Luxembourg. 20th to 22nd Oct. 2008.
39. **Sánchez M**., Villar M.V., Gens A., Gómez-Espina R. and Lloret A. (2008). "Swelling pressure in compacted bentonite: laboratory tests and modelling". *1st European Conference on Unsaturated Soils*, Durham, UK. 2nd to 4th Jul. 2008.
40. *Lloret M., **Sánchez M**., Wheeler S. and Karstunen M. (2008). "Generalised elasto-plastic stress-strain relations of a fully coupled hydromechanical model". *1st European Conference on Unsaturated Soils*, Durham, UK. 2nd to 4th Jul. 2008.
41. *McCloskey G., **Sánchez M**, Dyer M. and Kenny M. (2008). "Behaviour of a silt used in flood embankment construction in Indonesia" *1st European Conference on Unsaturated Soils*, Durham, UK. 2nd to 4th July, 2008.
42. *McCloskey G., **Sánchez M.**, Dyer M. and Soemitro R. (2008). "Collapse behaviour of a silt used in flood embankment construction in Indonesia". *Third International Workshop on Unsaturated Soils*, Trento, Italy. 4th to 7th Feb. 2008.

43. *McCloskey G., **Sánchez M.**, Dyer M. and Soemitro R. (2008). "Experimental behaviour of a compacted silt used in a flood defence embankment in Indonesia". *International Conference on Geotechnical and Highway Engineering*, Geotropika 2008, Kuala Lumpar, Malaysa. 26th to 27th May 2008.
44. Gens A., Guimarães L., Fernandez A.M., **Sánchez M**. and Olivella S. (2008). "Formulation for the THMC analysis of clayey materials. Application to radioactive waste disposal". *GeoCongress 2008 ASCE*, New Orleans, US. 9th to 12th Mar. 2008.
45. **Sánchez M.,** Villar M.V., Gens A Guimarães L. and Olivella S. (2007) "Modelling the effect of temperature on unsaturated swelling clays". *Tenth International Symposium on Numerical Models in Geomechanics. NUMOG X,* Rhodes, Greece. 25th to 27th Ap. 2007.
46. **Sánchez M.**, Gens A Guimarães L. and Olivella S. (2006) "Response of an unsaturated expansive clay under high temperature changes". *Fourth International Conference on Unsaturated Soils.* UNSAT 2006, Arizona, USA. 2nd to 5th Ap. 2006,
47. Guimarães L., Fernandez A., Gens A., Olivella S., **Sánchez M.** (2006). Coupled THMC analysis of a clay-based engineered barrier for nuclear waste disposal. *5th Environmental Geotechnics* ICEG, Cardiff, UK. 26th to 30th Jun. 2006.
48. **Sánchez**, **M**., Gens, A., Guimarães, L. do N., Olivella, S. (2006). "Modelling coupled behaviour of a clay barrier at high temperatures". *2nd lnternational Conference on coupled thermo-hydro-mechanical-chemical processes in Geoenvironmental Engineering* GeoShangai 2006, Shangai, China. 6th to 8th Jun. 2006,
49. **Sánchez M**., Gens A Guimarães L. and Olivella S. (2006) "Modelling the behaviour of expansive clays". *NUMGE 06, Numerical Methods in Geotechnical Engineering*, Graz, Austria. 6th to 8th Sep. 2006.
50. **Sánchez M.**, Gens A. and Olivella S. (2005) "Modelling the THM behaviour of unsaturated expansive soils using a double structure formulation". *II International Workshop on Unsaturated Soils: advances in testing, modelling and engineering applications.* Naples, Italy. A.A. Balkema, pp. 107-120. ISBN 04 1536 7425. 23rd to 25th Jun. 2004
51. Villar M., **Sánchez M**., Lloret A., Gens A., and Romero, E. (2005). "Experimental and numerical study of the THM behaviour of compacted FEBEX bentonite in small-scale tests". *Symposium Large Scale Field Tests in Granite. Sitges, Spain.* A.A. Balkema. pp. 323-337. ISBN 0415365449. 12th to 14th Nov. 2003.
52. **Sánchez M.**, Gens A., Guimarães, L. and Olivella S. (2005). "A constitutive model for compacted expansive clays". *Symposium Large Scale Field Tests in Granite. Sitges, Spain.* A.A. Balkema. pp. 221-229. ISBN 0415365449. 12th to 14th Nov. 2003.
53. Guimarães L., Gens A., **Sánchez M** and Olivella S. (2004) "THM and reactive transport analysis of expansive clay barrier in radioactive waste isolation". *XXV CILAMCE, Iberian Latin American Congress on Computational Methods*, Recife, Brazil. pp. 290-296. ISBN 85-7409-869-8. Nov. 2004.
54. Guimarães L., Gens A., Olivella S. and **Sánchez M**. (2004). "Coupled thermo-hydro-mechanical and chemical analysis of expansive clay barrier in radioactive waste isolation". *V Brazilian Symposium of unsaturated soils*, San Carlos, Brazil. pp. 149-154. ISBN 85-98156-043. Jun. 2004.
55. Gens, A., Guimaraes, L., Olivella, S., and **Sánchez M**. (2003) "Analysis of the THMC behaviour of compacted swelling clay in radioactive waste isolation". *International Conference on Coupled*

T-H-M-C Processes in Geosystem. Fundamentals, Modelling, Experiment and Applications. *GeoProc 2003*, Stockholm, Sweden. pp 317-322. Elsevier ISBN 008044525X. Oct. 2003.

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57. **Sánchez M**., Olivella S. and Gens A (2002) "A double structure formulation for the THM analysis of engineered barriers and seals". *Third International Conference on Unsaturated Soils. UNSAT 2002*, Recife, Brazil. pp 89-94. AA Balkema. ISBN 9058093719. Mar. 2002.
58. Barrera M., Romero E., **Sánche**z **M.** and Lloret, A. (2002) "Mechanical behaviour of unsaturated soils under triaxial conditions. Experimental study and modelling" (in Spanish). *XXI Congreso Mexicano de Mecánica de Suelos*, Querétaro, Mexico. Nov. 2002.
59. Barrera M., Romero E., **Sánchez M**. and A. Lloret. (2002). "Laboratory tests to validate and determine parameters of an elastoplastic model for unsaturated soils". *International Symposium on identification and determination of soils and rock parameters for geotechnical design. Param 2002*. Paris, France. pp 350-358. ISBN 2-85978-363-6. Sept. 2002.
60. **Sánchez M**., Gens A. and Olivella S. (2002). "A coupled double structure formulation for THM analysis". *Environmental Geomechanics. Monte Verita 2002*. Switzerland. Editores: Vulliet L., Laloui L., & Shrefler B. pp. 315-320 ISBN 2-88074-515-2. Jun. 2002.
61. Gens A., Alonso E.E., **Sánchez M.**, Guimarães L. and Olivella S. (2002) "Modelling approaches used for the EBS: the FEBEX II project". INIST-CNRS vol. (19954): 135-144. ISSN 1018-5593.
62. Guimaraes L., Gens A., **Sánchez M.** and Olivella S. (2001) "Chemo-mechanical modelling of expansive materials". *6th International Workshop on Key Issues in Waste Isolation Research*. Paris, France. pp. 463-495. Nov. 2001.
63. **Sánchez M.,** Gens, A., Guimaraes L. and Olivella S. (2001) "Generalized plasticity model for THM simulations involving expansive soils". *6th International Workshop on Key Issues in Waste Isolation Research*, Paris, France. pp. 397-415. Nov. 2001.
64. Guimaraes L., Gens A., **Sánchez M.** and Olivella S. (2001) "A Chemo-mechanical model for unsaturated expansive clays". Workshop: *Clay Behaviour: Chemo-mechanical coupling, from nano-structure to engineering applications*, Maratea, Italy. Jun. 2001.
65. **Sánchez M.**, Olivella S. and Gens A. (2001) "Modelación hidro-mecánica de un material de sellado mediante una formulación de doble estructura". *Congress: 'Las caras del agua subterránea'*. Barcelona, Spain. pp. 871-876. ISBN 84-7840-428-7. Sep. 2001.
66. Lloret A., Ledesma A., Rodriguez R., **Sánchez M.**, Olivella S. and Suriol, J. (1998) "Crack initiation in drying soils". *Second International Conference on Unsaturated Soils*. Beijing, China. Aug. 1998

V OTHER CONFERENCE AND WORKSHOP PUBLICATIONS (generally no peer reviewed)

1. **Sánchez M**., Santamarina J.C., *Gai X, *Teymouri M., and *Shastri A. (2016). "Coupled Thermo-Hydro-Chemo-Mechanical (THCM) Models for Hydrate-Bearing Sediments". *Fire in the Ice*, a DOE quarterly publication highlighting the latest developments in international gas hydrates R&D. Vol 16(1) 12-17. http://www.netl.doe.gov/research/oil-and-gas/methane-hydrates/fire-in-the-ice (in print).
2. **Sánchez M**., Gai X, Shastri A. and Santamarina J.C. Mechanical and Numerical Modeling of Gas Hydrate Bearing Sediments. (2016). *IV International Workshop on Modern Trends in*

Geomechanics. G. Viggiani, D. Salciarini, F. Silvestri, C. Tamagnini, G.M.B. Viggiani (Eds) Assisi, May 16th to 19th, 2016.

3. Gai X., **Sánchez M**. Geomechanical Modeling of Gas Hydrate Bearing Sediments. *2015 AGU Fall Meeting,* San Francisco, USA, 14th to 18th December 2015.
4. **Sánchez M**., Gai X, Santamarina J.C and Teymouri M. Numerical and Constitutive Modeling of Gas Hydrate Sediments. *1st International Conference on Geo-Energy and Geo-Environment. Hong Kong University of Science Technology (HKUST) December 4th to 5th 2015*.
5. **Sánchez M**., Gai X, Shastri A.,and Santamarina J.C. Coupled THCM Modeling of Gas Hydrate Bearing Sediments. *2014 AGU Fall Meeting, San Francisco*, USA, 15th to 19th December 2015
6. **Sánchez M.**, Santamarina JC, Gai X. and *Shastri A. (2014). "Coupled THMC Modeling of gas Hydrates Sediments". Presentation: *SES Annual Technical Meeting*. Purdue University, US. Oct 1st to 2nd 2014.
7. **Sánchez M.**, and *Shastri A. (2014). "Coupled THM Analysis of an Underground Compressed Air Storage Facility in Sandstone". Presentation: *PGS 2014 - Workshop on Energy Geotechnics*. Purdue University, US. 26th Apr. 2014.
8. **Sánchez M.**, (2014). "ISSMGE TC308 on Energy Geotechnics". Presentation: *PGS 2014 - Workshop on Energy Geotechnics*. Purdue University, US. 26th Apr. 2014.
9. *Wang D., **Sánchez M.**, and Briaud J.L. (2014). "Rails on Shrink Swell Soils". Poster: 2014 *AAR Annual Research Review Meeting*. Colorado Springs, US. 1st and 2nd Apr. 2014.
10. **Sánchez M.,** Santamarina J.C., *Shastri A., and *Gai X. "Numerical THCM Modeling of HBS Using a Truly Coupled Approach". Poster: *Gordon Research Conference on Natural Gas Hydrate Systems*. Galveston, US. 23rd to 28th Mar. 2014.
11. **Sánchez M.** Zielinski M., *Atique A., *Kim S. Manzioli O. and Guimarães L., Romero R. (2013). Presentation: "Desiccation Cracks in Soils: Recent Advances in Experimental and Numerical Techniques". *18th International Conference on Soil Mechanics and Geotechnical Engineering* (18th ICSMGE). Workshop on Unsaturated Soils. Paris, France. 2nd to 6th Sep. 2013.
12. **Sánchez M.,** *Wang D., and Briaud J.L. (2013). "Rails on Shrink Swell Soils: Problem and Possible Solutions". Poster: *2013 AAR Annual Research Review Meeting*. Pueblo, US. 5th and 6th Mar. 2013.
13. **Sánchez M.,** Gens A., *Jarecki Z., *Aponte F. (2012). "A fully coupled Thermo-Hydro-Mechanical Double Porosity Formulation for Modeling Multiphysics Problems in Geological Media". Poster: *2012 AGU Fall Meeting*, San Francisco, US. 3rd to 7th Dec. 2012.
14. **Sánchez M.,** and Arson C. (2012). "Analysis of Unsaturated Clayed Materials Hydration Incorporating the Effect of Thermo-Osmotic Flow". Poster: *5th International Meeting for Clays in Natural and Engineered Barriers for Radioactive Waste Confinement*. Montpellier, France. 22nd to 25th Oct. 2012.
15. Bean J., **Sánchez M**., and Argüello J. G. (2012). "Sierra Mechanics, An Emerging Massively Parallel HPC Capability, for use in Coupled THMC Analyses of HLW Repositories in Clay/Shale". Poster: *5th International Meeting for Clays in Natural and Engineered Barriers for Radioactive Waste Confinement.* Montpellier, France. 22nd to 25th Oct. 2012.
16. **Sánchez M**., and Santamarina JC. (2010). "Numerical Modeling of Gas Hydrate Bearing Sediments". Presentation: *Japan-US Symposium on Geomechanics of Hydrate Bearing Sediments*. Atlanta, US. 10th to 11th Dec. 2010

17. **Sánchez M.,** and Santamarina JC. (2010). "Thermo-Hydro-Mechanical modeling of Gas Hydrates Sediments". Poster: *Gordon Research Conference on Natural Gas Hydrate Systems*. Colby College in Waterville, Maine. US. 6th to 11th Jun. 2010.
18. *Lloret M., **Sánchez M**., Wheeler S. and Karstunen M. (2008). "Considering the coupling of water retention and mechanical behaviour in unsaturated soils". *3rd International Workshop of Young Doctors in Geomechanics*, Paris, France. 19th to 21st Nov. 2008.
19. Jacinto, A., **Sánchez**, **M**., and Ledesma, A. (2007). "THM analysis of a mock-up laboratory experiment using a double-structure expansive model". *3rd International Meeting on Clays in Natural & Engineered Barriers for Radioactive Waste Confinement*, Lille, France. 17th to 20th Sep. 2007.
20. Guimarães, L. do N., **Sánchez**, **M**., Fernández, A.M., Gens, A. (2007). "A THMC framework to consider microstructural effects in the analysis of clay barriers". *3rd International Meeting on Clays in Natural & Engineered Barriers for Radioactive Waste Confinement*, Lille, France. 17th to 20th Sep. 2007.
21. Villar, M.V., **Sánchez**, **M**., Gens, A. (2007). "Behaviour of a bentonite barrier in the laboratory: experimental results up to 8 years and numerical simulation". *3rd International Meeting on Clays in Natural & Engineered Barriers for Radioactive Waste Confinement*, Lille, France. 17th to 20th Sep. 2007.
22. *McCloskey G., Dyer M and **Sánchez M.** (2006). "Investigation of unsaturated soils found in flood embankments". *MUSE Workshop*, Paris, France. 15th to 18th May 2006.
23. **Sánchez M**., Guimarães L., Fernandez A.M, Olivella S. and Gens A. (2005) "On coupled THMC modelling of engineered barriers incorporating microstructural changes". *ANDRA Symposium: Using Natural and Engineered Clay-based Barriers for the Containment of Radioactive Waste.* Tours, France. 14th to 18th Mar. 2005.
24. **Sánchez M.**, Gens A. and Vaunat J. (2004). "Hydro-mechanical modelling of expansive clays using a double structure approach". *ALERT Workshop Geomaterials 2004*. Aussois, France. Oct. 2004
25. Gens A., Guimaraes L., Olivella S. and **Sánchez M.** (2003) "Coupled geochemical-THM analysis of a large scale in-situ heating test". *ALERT Workshop 2003,* Aussois, France. Oct. 2003
26. **Sánchez M**., Gens A. and Olivella S (2002) "A double structure model for expansive clays". *International Workshop of Young Doctors in Geomechanics 2002*, Paris, France. pp.15-16. Dec. 2002
27. Marcet J., Fiore J., Cordo O., **Sánchez M.**, Núñez E., Chiappero C., and Bustos M. (2000). "Dynamic properties of soils used in the design of pavements." *XV Congreso Argentino de Mecánica de Suelos e Ingeniería Geotécnica*, Buenos Aires, Argentina. Oct. 2000.
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29. **Sánchez M**., Olivella S., Gens A. and Alonso E. E. (1999). "Thermo-hydro-mechanical behaviour of a bentonite barrier for radioactive waste disposal. CIEMAT Mock-Up Test". *ALERT Workshop 99*, Aussois, France. Oct. 1999.

VI TECHNICAL REPORTS

1. **Sánchez M.** Gai X., Teymouri M. (2016). "Quarterly Research Performance Progress Report (Period ending 12/31/2015)". DOE Award No.: DE-FE0013889. Project: THCM Coupled Model For Hydrate-Bearing Sediments: Data Analysis and Design of New Field Experiments (Marine and Permafrost Settings). Jan. 2016. Pp 28.
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TEACHING EXPERIENCE

I Under-graduate teaching at Texas A&M University (2009 to present):

- Introduction to Geotechnical Engineering (CVEN365). Student evaluation score: 4.27/5.0 (average of 9 semesters: FA09=4.15; SP10=4.36; FA10=4.47; SP11=4.10; FA12=4.31; SP13=4.02; FA13=4.21; SP14=4.30, SP15=4.48).
- Mechanics of Materials (CVEN305). Student evaluation score: 3.90/5.0 (average of 2 semesters: FA11=4.08; SP12=3.65)

II Graduate teaching at Texas A&M University (2010 to present):

- Transport Phenomena in Porous Media (CVEN 673). Student evaluation score: 4.80/5.0 (average of 5 semesters: FA10=4.87; FA11=4.80; SP13=4.68; FA13=4.84; SP15=4.81).
- Foundations on Expansive Soils (CVEN 646). Student evaluation score: 4.68/5.0 (FA13)
- Physical and Engineering Properties of Soils (CVEN 649). Student evaluation score: 4.44/5.0 (FA14:4.70; FA15=4.20)

III Under-graduate teaching at Strathclyde University (2005 to 2009):

- Basic Soil Mechanics. Lecturer in charge.
- Geotechnical Engineering I. Lecturer in charge.
- Engineering Science IV. (co-taught course)
- Supervisor of over 10 MEng/BEng projects since 2005.

IV Graduate teaching at Strathclyde University (2008 to 2009):

- Introduction to Geotechnics. MSc in Geotechnics. (co-taught course).
- Soil Modeling and Numerical Analysis. MSc in Geotechnics. (co-taught course).

V Under-graduate Teaching at Nat. Univ. of San Juan, Argentina (1991 to 1998):

- Soil Mechanics (co-taught course).
- Foundations and Geotechnical Engineering (co-taught course).
- Rock-Mechanics (co-taught course).

VI Graduate Teaching at National Universities in Argentina (2006 to present):

- Numerical modeling in Soil Mechanics. MSc and PhD Program. National Univ. of Tucuman (Jun. 2006)
- Advanced Soil Mechanics. MSc and PhD Program. National Univ. of San Juan (Jun. 2009).
- Advanced Soil Mechanics. MSc and PhD Program. Nat. Univ. of San Juan (Jul. 2013)

DEPARTMENT RESPONSIBILITIES (STRATHCLYDE UNIVERSITY - UK)

- Sessions 2005/2006 and 2006/2007: 2nd Year Coordinator. Undergraduate program, Civil Engineering.
- Session 2007/2008: Program Leader for the MSc in 'Geotechnics in Partnership with the Industry'.
- Session 2008/2009: PhD Program Manager (Civil and Environmental Engineering).

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