

## CV - Miguel Ángel Mánica Malcom

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### A Academic Degrees

1. 2005 - 2010 **Civil Engineering** Universidad Autónoma de Veracruz Villa Rica
2. 2011 - 2013 **M.Eng.** (Geotechnical Engineering) Universidad Nacional Autónoma de México
3. 2014 - 2018 **Ph.D.** (Geotechnical Engineering) Universitat Politècnica de Catalunya

### B Postdoctoral positions and research stays

1. Apr. 2017 - July. 2017 Visiting scholar Imperial College London
2. 2019 - 2021 Postdoctoral fellow Institute of Engineering UNAM

### C Awards and Scholarships

1. 2010 Best grades of the Civil Engineering 2005-2010 generation. Granted by Universidad Autónoma de Veracruz Villa Rica.
2. 2010 Best grades in undergraduate studies for universities incorporated to UNAM. Granted by DGIRE-UNAM.
3. 2012 Member of the winning team of the first *Geotechnical olympic games* at the XVII National Meeting of Teachers in Soil Mechanics and Geotechnical Engineering.
4. 2013 Honorable mention in the Master's degree.
5. 2014 CONACyT Ph.D. scholarship, Reg. 270190.
6. 2014 IIUNAM master's thesis award. Granted by the Institute of Engineering UNAM
7. 2014 SEP Complementary scholarship (renewed in 2015 and 2016). Granted by the Mexican Secretariat of Public Education.
8. 2017 Research scholarship UPC - La Caixa, for visiting scholars.
9. 2018 *Cum Laude* and *International PhD Mention* in the PhD degree.
10. 2019 Postdoctoral Fellowship UNAM. Granted by the Technical Council of Scientific Research UNAM.
11. 2019 National System of Researchers (SNI) CONACyT - Candidate level.
12. 2021 Manuel González Flores Price, research modality. Granted by the Mexican Society of Geotechnical Engineering.
13. 2022 Honourable mention in the IX SEMR award for the best research work on rock mechanics. Granted by the Spanish Society of Rock Mechanics.
14. 2022 National System of Researchers (SNI) CONACyT - Promotion, Level 1.

## D Peer reviewed journals

1. Mánica, M., Ovando, E., & Botero, E. (2014a). Assessment of damping models in FLAC. *Computers and Geotechnics*, *59*, 12–20, <https://doi.org/10.1016/j.compgeo.2014.02.007>
2. Mánica, M. A., Gens, A., Vaunat, J., & Ruiz, D. F. (2016b). A cross-anisotropic formulation for elasto-plastic models. *Géotechnique Letters*, *6*(2), 156–162, <https://doi.org/10.1680/jgele.15.00182>
3. Mánica, M. A., Ovando, E., & Botero, E. (2016c). Numerical study of the seismic behavior of rigid inclusions in soft Mexico City clay. *Journal of Earthquake Engineering*, *20*(3), 447–475, <https://doi.org/10.1080/13632469.2015.1085462>
4. Mánica, M., Gens, A., Vaunat, J., & Ruiz, D. F. (2017a). A time-dependent anisotropic model for argillaceous rocks. Application to an underground excavation in Callovo-Oxfordian claystone. *Computers and Geotechnics*, *85*, 341–350, <https://doi.org/10.1016/j.compgeo.2016.11.004>
5. Mánica, M. A., Gens, A., Vaunat, J., & Ruiz, D. F. (2018). Nonlocal plasticity modelling of strain localisation in stiff clays. *Computers and Geotechnics*, *103*, 138–150, <https://doi.org/10.1016/j.compgeo.2018.07.008>
6. Conesa, S., Mánica, M., Gens, A., & Huang, Y. (2019). Numerical simulation of the undrained stability of slopes in anisotropic fine-grained soils. *Geomechanics and Geoengineering*, *14*(1), 18–29, <https://doi.org/10.1080/17486025.2018.1490460>
7. Pinzón, L. A., Mánica, M. A., Pujades, L. G., & Alva, R. E. (2020). Dynamic soil-structure interaction analyses considering directionality effects. *Soil Dynamics and Earthquake Engineering*, *130*, 106009, <https://doi.org/10.1016/j.soildyn.2019.106009>
8. Mánica, M. A., Ciantia, M. O., & Gens, A. (2020). On the stability of underground caves in calcareous rocks due to long-term weathering. *Rock Mechanics and Rock Engineering*, *53*, 3885–3901, <https://doi.org/10.1007/s00603-020-02142-y>
9. Mánica, M. A., Gens, A., Ovando-Shelley, E., Botero, E., & Vaunat, J. (2021e). An effective combined framework for modelling the time-dependent behaviour of soft structured clays. *Acta Geotechnica*, *16*(2), 535–550, <https://doi.org/10.1007/s11440-020-01025-4>
10. Monforte, L., Gens, A., Arroyo, M., Mánica, M., & Carbonell, J. M. (2021). Analysis of cone penetration in brittle liquefiable soils. *Computers and Geotechnics*, *134*, 104123, <https://doi.org/10.1016/j.compgeo.2021.104123>
11. González, R. A., Mánica, M. A., & Ovando-Shelley, E. (2021b). Simulation of the time-dependent behaviour of a test embankment on soft soil. *Proceedings of the Institution of Civil Engineers: Geotechnical Engineering*, (pp. 1–16)., <https://doi.org/10.1680/jgeen.21.00081>
12. Mánica, M. A., Arroyo, M., Gens, A., & Monforte, L. (2022d). Application of a critical state model to the Merriespruit tailings dam failure. *Proceedings of the Institution of Civil Engineers - Geotechnical Engineering*, *175*(2), 151–165, <https://doi.org/10.1680/jgeen.21.00001>
13. Mánica, M. A., Gens, A., Vaunat, J., Armand, G., & Vu, M. N. (2022f). Numerical simulation of underground excavations in an indurated clay using non-local regularisation. Part 1: Formulation and base case. *Geotechnique*, *72*(12), 1092–1112, <https://doi.org/10.1680/jgeot.20.P.246>

14. Mánica, M. A., Gens, A., Vaunat, J., Armand, G., & Vu, M. N. (2022g). Numerical simulation of underground excavations in an indurated clay using non-local regularisation. Part 2: sensitivity analysis. *Geotechnique*, 72(12), 1113–1128, <https://doi.org/10.1680/jgeot.20.p.247>
15. Ordaz, M., Mánica, M. A., Salgado-Gálvez, M. A., & Osorio, L. (2022). Inclusion of site-effects: an approach coherent with contemporary event-based PSHA practices. *Soil Dynamics and Earthquake Engineering*, 158, 107286, <https://doi.org/10.1016/j.soildyn.2022.107286>
16. Ordaz, M., Salgado-Gálvez, M. A., Mánica, M. A., Ovando-shelley, E., Faccioli, E., Osorio, L., & Clara, M. (2023). Event-based probabilistic liquefaction hazard analysis for defining soil acceptance criteria. *Soil Dynamics and Earthquake Engineering*, 166(December 2022), 107781, <https://doi.org/10.1016/j.soildyn.2023.107781>
17. Díaz, M. A., Mánica, M. A., Botero, E., Ovando-Shelley, E., & Osorio, L. (2023). Material damping in a stratified soil deposit. *Earth Science Research Journal*, (accepted, in press)

## E Book chapters

1. Mánica, M. A., Ruiz, D. F., Vaunat, J., & Gens, A. (2019c). Geomechanics of Shale Repositories: Mechanical Behavior and Modeling. In T. Dewers, J. Heath, & M. Sánchez (Eds.), *Geophysical Monograph Series*, volume 245 (pp. 99–123). Wiley <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1002/9781119066699.ch7>
2. Mánica, M. A. (2022). Modelos de comportamiento. In R. Rivera (Ed.), *Temas selectos de análisis numérico aplicados a la ingeniería geotécnica* chapter 1.3. Ciudad de Mexico: Sociedad Mexicana de Ingeniería Geotécnica [https://www.researchgate.net/publication/365782878\\_Modelos\\_de\\_comportamiento](https://www.researchgate.net/publication/365782878_Modelos_de_comportamiento)
3. Ovando-Shelley, E., Sánchez, F., & Mánica, M. A. (2022). Modelización constitutiva de geomateriales. In J. L. Rangel (Ed.), *Ingeniería geotécnica de túneles* chapter 4. Ciudad de Mexico: Sociedad Mexicana de Ingeniería Geotécnica [https://www.researchgate.net/publication/365782674\\_Modelizacion\\_constitutiva\\_de\\_geomateriales](https://www.researchgate.net/publication/365782674_Modelizacion_constitutiva_de_geomateriales)

## F Proceedings at international conferences

1. Mánica, M. (2013). Numerical study of the dynamic behavior of a site reinforced with rigid inclusions. In Y.-J. Cui (Ed.), *Proceedings of the 5th International Young Geotechnical Engineers' Conference*, number Figure 1 (pp. 126–129). Paris, France: IOS Press <http://doi.org/10.3233/978-1-61499-297-4-126> (oral presentation)
2. Mánica, M. & Botero, E. (2014). Stress Increments due to an Embankment Load. In J. Pombo (Ed.), *Proceedings of the Second International Conference on Railway Technology: Research, Development and Maintenance* (pp. 1–7).: Civil-Comp Press <http://doi.org/10.4203/ccp.104.49> (oral presentation)

3. Mánica, M., Gens, A., Vaunat, J., & Ruiz, D. F. (2015a). Anisotropic failure criterion for an argillaceous rock: Formulation and application to an underground excavation case. In E. Oñate, D. R. J. Owen, D. Peric, & M. Chiumenti (Eds.), *XIII International Conference on Computational Plasticity. Fundamentals and Applications*, number September (pp. 654–660). Barcelona, Spain <http://hdl.handle.net/2117/81414> (oral presentation)
4. Gens, A., Manica, M., Vaunat, J., & Ruiz, D. F. (2017). Modelling the Mechanical Behaviour of Callovo-Oxfordian Argillite. Formulation and Application. In A. Ferrari & L. Laloui (Eds.), *Advances in Laboratory Testing and Modelling of Soils and Shales (ATMSS)* (pp. 37–44). Villars-sur-Ollon: Springer [https://doi.org/10.1007/978-3-319-52773-4\\_4](https://doi.org/10.1007/978-3-319-52773-4_4)
5. Mánica, M., Gens, A., Vaunat, J., & Ruiz, D. F. (2017c). Hydromechanical modelling of a tunnel excavated in argillaceous rock. In G. Hofstetter, K. Bergmeister, J. Eberhardsteiner, G. Meschke, & H. F. Schweiger (Eds.), *Computational methods in tunneling and subsurface engineering* (pp. 491–495). Innsbruck: Universität Innsbruck <http://hdl.handle.net/2117/114302>
6. Mánica, M., Gens, A., Vaunat, J., & Ruiz, D. F. (2017b). Analysis of strain localization with a nonlocal plasticity model. In E. Oñate, D. R. J. Owen, D. Peric, & M. Chiumenti (Eds.), *XIV International Conference on Computational Plasticity. Fundamentals and Applications* (pp. 606–612). Barcelona: CIMNE <http://hdl.handle.net/2117/180957> (oral presentation)
7. Ruiz, D. F., Vaunat, J., Gens, A., & Mánica, M. A. (2017). Analysis of the hydration of an unsaturated seal. In *Second Pan American conference on unsaturated soils* (pp. 329 – 338). Dallas: ASCE <https://doi.org/10.1061/9780784481691.033>
8. Pinzon, L. A., Pujades, L. G., Alva, R. E., & Mánica, M. A. (2019). A simplified approach to account for directionality effects on 2D dynamic soil-structure interaction analysis. In F. Silvestri & N. Moraci (Eds.), *7th International conference on earthquake geotechnical engineering* (pp. 4490–4497). Rome: CRC Press [https://www.researchgate.net/publication/355381559\\_A\\_simplified\\_approach\\_to\\_account\\_for\\_directionality\\_effects\\_on\\_2D\\_dynamic\\_soil-structure\\_interaction\\_analysis](https://www.researchgate.net/publication/355381559_A_simplified_approach_to_account_for_directionality_effects_on_2D_dynamic_soil-structure_interaction_analysis)
9. Manica, M., Conesa, S., & Gens, A. (2019). Anisotropy effects on the undrained stability of cuts in clays. In *17th African regional conference on soil mechanics and geotechnical engineering* (pp. 689–694). Cape Town: International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) <http://hdl.handle.net/2117/180222>
10. Ordaz, M., Mánica, M. A., Ovando, E., Osorio, L., Madrigal, M. C., & Salgado-Gálvez, M. A. (2020). Probabilistic Liquefaction Hazard Analysis (PLHA) revisited. In *17th World Conference on Earthquake Engineering, 17WCEE* Sendai, Japan [https://www.researchgate.net/publication/344408306\\_Probabilistic\\_liquefaction\\_hazard\\_analysis\\_PLHA\\_revisited](https://www.researchgate.net/publication/344408306_Probabilistic_liquefaction_hazard_analysis_PLHA_revisited)
11. Tourchi, S., Gens, A., Vaunat, J., Mánica, M. A., & Scaringi, G. (2020). A thermomechanical model for argillaceous rocks. In *2nd International Conference on Energy Geotechnics (ICEGT 2020)*, volume 205 (pp. 13014). La Jolla, California: E3S Web of Conferences <https://doi.org/10.1051/e3sconf/202020513014>
12. Mánica, M. A., Arroyo, M., & Gens, A. (2021d). Effects of tailings viscosity on liquefaction triggering analyses. In *Tailings & Mine Waste 2021 Conference* Banff, Alberta <http://hdl.handle.net/2117/366714>

13. Mánica, M. A., Ovando-Shelley, E., Botero, E., Gens, A., & Vaunat, J. (2022h). A framework for the time-dependent behaviour of soft structured clays. In *20th International conference on soil mechanics and geotechnical engineering* Sydney (**oral presentation**)
14. González, R. A., Mánica, M. A., & Ovando-Shelley, E. (2022). Time dependent behavior of a trial embankment on Mexico City clay. In *7th International Young Geotechnical Engineers Conference* Sydney
15. Pinedo, P., Besenzon, D., Manica, M., Arroyo, M., & Gens, A. (2022). Exploring viscous effects on numerical simulations of static liquefaction triggering. In *Tailings 2022* Online [https://www.researchgate.net/publication/361743898\\_Exploring\\_Viscous\\_Effects\\_on\\_Numerical\\_Simulations\\_of\\_Static\\_Liquefaction\\_Triggering](https://www.researchgate.net/publication/361743898_Exploring_Viscous_Effects_on_Numerical_Simulations_of_Static_Liquefaction_Triggering)

## G Abstracts and posters at international conferences

1. Ruiz, D. F., Vaunat, J., Gens, A., Mánica, M., & Pasteau, A. (2015). Insights into the response of a gallery sealing over the entire life of a deep repository. In *Clays in Natural and Engineered Barriers for Radioactive Waste Confinement* (pp. 433–434). Brussels (**abstract**)(**poster**)
2. Mánica, M. A., Gens, A., Vaunat, J., Ruiz, D. F., Seyedi, D., & Armand, G. (2015b). Numerical modelling of drifts excavated in stiff clays. In *Clays in Natural and Engineered Barriers for Radioactive Waste Confinement* (pp. 435–436). Brussels [https://www.researchgate.net/publication/326083247\\_Numerical\\_modelling\\_of\\_drifts\\_excavated\\_in\\_stiff\\_clays](https://www.researchgate.net/publication/326083247_Numerical_modelling_of_drifts_excavated_in_stiff_clays) (**abstract**)(**poster**)
3. Mánica, M., Gens, A., Vaunat, J., & Ruiz, D. F. (2016a). Hydromechanical simulation of a drift excavated in the Callovo-Oxfordian Argillite. In *8th Workshop of CODE-BRIGHT* (pp. 1–6). Barcelona (**oral presentation**)(**abstract**)
4. Mánica, M. A., Gens, A., Vaunat, J., Ruiz, D. F., Seyedi, D., & Armand, G. (2017d). Analysis of localized deformations around deep excavations in argillaceous rocks. In *7th International conference on clays in natural and engineered barriers for radioactive waste confinement* (pp. 179–180). Davos (**oral presentation**)(**abstract**)
6. Mánica, M. A., Simo, E., Herold, P., & Nagel, T. (2022i). Hydromechanical simulation of tunnels in indurated clayey formations using a nonlocal constitutive model. In *Tage der Standortauswahl 2022* (pp. 31). Peine, Germany (**abstract**)
6. Simo, E., Herold, P., Mánica, M. A., Helfer, T., Masín, D., Nagel, T., Song, F., & Gens, A. (2022b). Projekt PIONIER: Implementierung und Weiterentwicklung von Stoffmodellen für Tongesteine und Bentonit zur Simulation THM – gekoppelter Prozesse im Rahmen sicherheitsanalytischer Untersuchungen. In *Tage der Standortauswahl 2022* (pp. 33). Peine, Germany (**abstract**)
7. Mánica, M., Gens, A., Vaunat, J., Armand, G., & Vu, M.-N. (2022a). On the hydromechanical response of deep underground excavations in a brittle anisotropic claystone. In *8th international conference on clays in natural and engineered barriers for radioactive waste confinement* Nancy, France <http://doi.org/10.13140/RG.2.2.24133.32486> (**oral presentation**)(**abstract**)

8. Herold, P., Simo, E., & Mánica, M. (2022). Numerical analyses of lining systems for a future German repository in claystone based on a time-dependent non-local constitutive model. In *8th international conference on clays in natural and engineered barriers for radioactive waste confinement* Nancy, France <http://doi.org/10.13140/RG.2.2.19100.16008> (**abstract**)(**poster**)
9. Mánica, M., Simo, E., & Herold, P. (2022c). A sensitivity study on the long-term behaviour of an excavation in claystone with a yieldable support system. In *8th international conference on clays in natural and engineered barriers for radioactive waste confinement* Nancy, France <http://doi.org/10.13140/RG.2.2.35877.37600> (**abstract**)(**poster**)
10. Mánica, M., Gens, A., Vaunat, J., Armand, G., & Vu, M.-N. (2022b). Simulation of the fracture zone around underground excavations in claystone. In *5th International conference on computational methods and information models in tunneling* Bochum, Germany (**oral presentation**)(**abstract**)

## H Proceedings at national conferences

1. Mánica, M. (2012b). Incremento de esfuerzos producido por un terraplén. In *XXVI Reunión Nacional de Mecánica de Suelos e Ingeniería Geotécnica* Cancún, Quintana Roo: Sociedad Mexicana de Ingeniería Geotécnica <http://doi.org/10.13140/2.1.2555.2323> (**poster**)
2. Mánica, M. (2012a). Distribución de asentamientos elásticos producidos por una configuración de carga superficial compleja. In *XXVI Reunión Nacional de Mecánica de Suelos e Ingeniería Geotécnica* Cancún, Quintana Roo: Sociedad Mexicana de Ingeniería Geotécnica <http://doi.org/10.13140/2.1.4914.5284> (**poster**)
3. Díaz, M. A., Mánica, M. A., Ovando, E., Botero, E., Sánchez, M., & Carvajal, E. (2021). Respuesta sísmica de sistemas de cimentación a base de inclusiones rígidas. In *XXX Reunión Nacional de Ingeniería Geotécnica* (pp. 287–296). Online: Sociedad Mexicana de Ingeniería Geotécnica [https://www.researchgate.net/publication/350889892\\_Respuesta\\_sismica\\_de\\_sistemas\\_de\\_cimentacion\\_a\\_base\\_de\\_inclusiones\\_rigidas](https://www.researchgate.net/publication/350889892_Respuesta_sismica_de_sistemas_de_cimentacion_a_base_de_inclusiones_rigidas) (**oral presentation**)
4. Mánica, M., Ciantia, M. O., & Gens, A. (2021b). Sobre la simulación numérica de materiales cuasi-frágiles en problemas de ingeniería. In *XXX Reunión Nacional de Ingeniería Geotécnica* (pp. 591–598). Online: Sociedad Mexicana de Ingeniería Geotécnica [https://www.researchgate.net/publication/350889917\\_Sobre\\_la\\_simulacion\\_numerica\\_de\\_materiales\\_cuasi-fragiles\\_en\\_problemas\\_de\\_ingenieria](https://www.researchgate.net/publication/350889917_Sobre_la_simulacion_numerica_de_materiales_cuasi-fragiles_en_problemas_de_ingenieria) (**oral presentation**)
5. González, R., Mánica, M., & Ovando, E. (2021a). Simulación de un terraplén en suelo blando con un modelo constitutivo anisótropo dependiente del tiempo. In *XXX Reunión Nacional de Ingeniería Geotécnica* (pp. 551–560). Online: Sociedad Mexicana de Ingeniería Geotécnica [https://www.researchgate.net/publication/350889937\\_Simulacion\\_de\\_un\\_terrapien\\_en\\_suelo\\_blando\\_con\\_un\\_modelo\\_constitutivo\\_anisotropo\\_dependiente\\_del\\_tiempo](https://www.researchgate.net/publication/350889937_Simulacion_de_un_terrapien_en_suelo_blando_con_un_modelo_constitutivo_anisotropo_dependiente_del_tiempo)
6. Mánica, M., Ovando, E., Botero, E., Gens, A., & Vaunat, J. (2021c). Marco teórico para la modelación numérica de arcillas blandas estructuradas. In *XXX Reunión Nacional de Ingeniería Geotécnica* (pp. 581–589). Online [https://www.researchgate.net/publication/350890028\\_Marco\\_teorico\\_para\\_la\\_modelacion\\_numerica\\_de\\_arcillas\\_blandas\\_estructuradas](https://www.researchgate.net/publication/350890028_Marco_teorico_para_la_modelacion_numerica_de_arcillas_blandas_estructuradas)

7. de Santiago, O., Mánica, M. A., & Ovando-Shelley, E. (2021). Estimación de la porosidad en un medio saturado a partir de velocidades de propagación de ondas sísmicas. In M. A. Mánica, F. A. Flores, R. Ortiz, R. Verduzco, R. Avelar, & E. Botero (Eds.), *7mo Coloquio de Jóvenes Geotecnistas* (pp. 49–52). Online: Sociedad Mexicana de Ingeniería Geotécnica
8. Soler, M., Mánica, M., & Ovando-Shelley, E. (2021). Optimización de los parámetros de compresibilidad en un ensayo oedométrico. In M. A. Mánica, F. A. Flores, R. Ortiz, R. Verduzco, R. Avelar, & E. Botero (Eds.), *7mo Coloquio de Jóvenes Geotecnistas* (pp. 71–76). Online: Sociedad Mexicana de Ingeniería Geotécnica
9. Nava, J. L., Mánica, M. A., Ovando-Shelley, E., & Flores, O. (2021). Efecto de la duración de la carga en pruebas oedométricas en Arcilla de la Ciudad de México. In M. A. Mánica, F. A. Flores, R. Ortiz, R. Verduzco, R. Avelar, & E. Botero (Eds.), *7mo Coloquio de Jóvenes Geotecnistas* (pp. 53–56). Online: Sociedad Mexicana de Ingeniería Geotécnica
10. Romero, T., Mánica, M. A., Ovando-Shelley, E., Flores, M., Botero, E., & Ossa, A. (2021). Implementación de una metodología basada en la fotogrametría para la medición de deformaciones en ensayos triaxiales. In M. A. Mánica, F. A. Flores, R. Ortiz, R. Verduzco, R. Avelar, & E. Botero (Eds.), *7mo Coloquio de Jóvenes Geotecnistas* (pp. 65–70). Online: Sociedad Mexicana de Ingeniería Geotécnica
11. Mánica, M. A., Gens, A., & Vaunat, J. (2022e). Efecto de la excavación de túneles en una roca arcillosa. In *XI Simposio nacional de ingeniería geotécnica* Mieres, España

## I Divulagation articles

1. Mánica, M., Ovando, E., & Botero, E. (2014b). Estudio numérico del comportamiento dinámico de las inclusiones rígidas. *Geotecnia*, (232), 32–38 [https://issuu.com/helios\\_comunicacion/docs/geo232\\_-\\_baja/4](https://issuu.com/helios_comunicacion/docs/geo232_-_baja/4)
2. Valenzuela, J., Montiel, E., Mánica, M. A., & Ossa, A. (2020). Modelización numérica del mecanismo de falla por subpresión de lumbreras en suelos. *Obras Subterráneas*, (26), 18–23 <https://www.amitos.org/projects/revista-os-26/>
3. Mánica, M. A., Ciantia, M. O., & Gens, A. (2019b). Modelización de deformaciones plásticas localizadas y su aplicación a un problema de estabilidad en una formación calcárea. *Obras Subterráneas*, (26), 10–17 <https://www.amitos.org/projects/revista-os-26/>
4. Mánica, M., Gens, A., Ovando, E., Botero, E., & Vaunat, J. (2019a). Modelado numérico avanzado de arcillas blandas estructuradas. *Gaceta del Instituto de Ingeniería UNAM*, 1(138), 3–5 <http://www.ii.unam.mx/es-mx/Investigacion/Proyecto/Paginas/Modeladonumericodearcillas.aspx>
5. Ordaz, M., Mánica, M., Ovando, E., Osorio, L., & Madrigal, M. C. (2019). Análisis probabilista del peligro de licuación. *Gaceta del Instituto de Ingeniería UNAM*, 1(140), 11–13 <http://www.ii.unam.mx/es-mx/Investigacion/Proyecto/Paginas/Analisis-del-peligro-de-licuacion-.aspx>
6. Mánica, M., Arroyo, M., Gens, A., Ovando, E., Botero, E., & Flores-Castrellón, O. (2021a). Simulación de la falla por licuación en presas de jales. *Gaceta del Instituto de Ingeniería UNAM*, (148) [http://www.ii.unam.mx/es-mx/AlmacenDigital/Gaceta/Gaceta\\_mayo\\_junio/Paginas/simulacion-falla-por-licuacion-presa-jales.aspx](http://www.ii.unam.mx/es-mx/AlmacenDigital/Gaceta/Gaceta_mayo_junio/Paginas/simulacion-falla-por-licuacion-presa-jales.aspx)

7. Simo, E., Herold, P., Engelhardt, H.-J., te Kook, J., Pflüger, B., Scior, C., Studeny, A., & Mánica, M. (2022a). Diseño de estructuras de soporte para un depósito de residuos nucleares de alta actividad en formaciones arcillosas en Alemania, basado en análisis numéricos. *Obras Subterráneas*, 36(9-18) <https://www.amitos.org/revista-obras-subterraneeas-no-36/>
8. Tourchi, S., Gens, A., Vaunat, J., Mánica, M., & Scaringi, G. (2022). Modelado termo-hidro-mecánico de excavaciones subterráneas en rocas arcillosas: Marco teórico y estudio numérico. *Obras Subterráneas*, 36, 19–24 <https://www.amitos.org/revista-obras-subterraneeas-no-36/>

## J Peer Review Activities

1. [Member of the International Scientific Committee](#) for the Journal *Ingeniería* of the University of Costa Rica.
2. Reviewer for the journal *Geomechanics for Energy and the Environment*.
3. Reviewer for the journal *Earth Science Research Journal*.
4. Reviewer for the journal *Engineering Computations*.
5. Reviewer for the journal *Geotechnical Engineering (Proceedings of the ICE)*.
6. Reviewer for the journal *Ingeniería*.
7. Reviewer for the journal *Rock Mechanics and Rock Engineering*.
8. Reviewer for the journal *Géotechnique*.
9. Reviewer for the journal *Computers and Geotechnics*.
10. Reviewer for the journal *Journal of Geotechnical and Geoenvironmental Engineering*.

## K Teaching Experience

1. 2015 - 2018 *Numerical models in Geotechnical Engineering*, Master's degree in Geotechnical Engineering, Universitat Politècnica de Catalunya.
2. 2019 - pres *Special topics in soil behavior*, Master's degree in Civil Engineering (Geotechnics), National Autonomous University of Mexico.

## L Ph.D. thesis supervision

1. in progress Tomás Romero. *Estudio experimental y numérico del comportamiento de arcillas cementadas y sus implicaciones en análisis de estabilidad*. Master's and PhD Program, National Autonomous University of Mexico.
2. in progress José Luis Nava. *Estudio experimental y numérico del comportamiento dependiente del tiempo de las arcillas blandas estructuradas del Valle de México*. Master's and PhD Program, National Autonomous University of Mexico.
3. in progress Luis G. Cruz. *Mejoramiento de las propiedades mecánicas y químicas de jales para su utilización en la construcción del bordo de una presa diseñada por el método de la línea central*. Master's and PhD Program, National Autonomous University of Mexico. **(co-director)**

## M Master's thesis supervision

1. 2017 Sergi Conesa. *Effect of inherent strength anisotropy on the stability of slopes using the finite element method*. Universidad de Tongji, China. (**codirector**)
2. 2017 Marvin Middelhoff. *Contributions to the simulation of salt concrete behaviour - short- and long-term mechanical description involving an advance plasticity model approach*. Universidad Técnica de Clausthal, Alemania. (**codirector**)
4. 2022 Mabel A. Soler. *Determinación de parámetros de compresibilidad implementando una metodología de back analysis*. Master's and PhD Program, National Autonomous University of Mexico.
5. 2022 Omar De Santiago. *Aplicación de la teoría del estado crítico al fenómeno de licuación - Caracterización y modelación*. Master's and PhD Program, National Autonomous University of Mexico.
3. in progress Sandra E. Perales. *Modelación numérica del comportamiento hidromecánico de una excavación en una roca blanda*. Master's and PhD Program, National Autonomous University of Mexico.
6. in progress Eduardo D. Hernández. *Estudio de una metodología para la deconvolución en el dominio del tiempo en materiales elastoplásticos*. Master's and PhD Program, National Autonomous University of Mexico.
7. in progress Eloy M. Castillo. *Implementación del modelo constitutivo CASM para el análisis del fenómeno de licuación estática en las plataformas de código abierto MFront y OpenGeoSys*. Master's and PhD Program, National Autonomous University of Mexico.
8. in progress Allyson M. López. *Modelación del fenómeno de envejecimiento en arcillas y su aplicación al análisis de cimentaciones de estructuras costa fuera*. Master's and PhD Program, National Autonomous University of Mexico.
9. in progress Ángel Morales *Evaluación de la estabilidad de taludes ante acciones sísmicas considerando efectos de direccionalidad*. Master's and PhD Program, National Autonomous University of Mexico.

## N Participation in thesis examinations

1. 2020 Juan C. Valenzuela. Master's thesis, Master's and PhD Program, National Autonomous University of Mexico.
2. 2021 Julián A. Buriticá. PhD thesis, Department of Civil and Environmental Engineering, aculty of Technology, University of Brasilia.

## O Scientific and technical societies

1. 2016 - pres Member of the Mexican Society of Geotechnical Engineering (SMIG).
2. 2019 - pres Member of the Mexican Association of Tunnels and Underground Works Engineering (AMITOS).
3. 2019 - 2021 President of the Young Engineers Group AMITOS.
4. 2021 - 2022 Spokesperson of the SMIG steering committee 2021-2022.

5. 2021 - 2022 Secretariat of the SMIG steering committee 2023-2024.
6. 2022 - pres President of the Technical Committee on Numerical Modelling SMIG.
7. 2022 - pres Vice president on microtunnelling of the AMITOS XVIII Directive Council.
8. 2022 - pres Mexican Representative of the Young Members Presidential Group (YMPG) of the International Society for Soil Mechanics and Geotechnical Engineering (SISMGE).

## **P Participation in relevant research and consulting projects**

1. 2011 Bearing capacity calculations for the Autopista Urbana del Norte project. Prepared for Dirección General de Obras Concesionadas de la Secretaría de Obras y Servicios et al., Mexico.
2. 2014 Simulation of underground excavations within the context of the disposal of nuclear waste. Simulation program UPS4. Prepared for the French national radioactive waste management agency ANDRA, France.
3. 2020 Analysis of the behaviour of foundation systems based on rigid inclusions under seismic loading. Prepared for Keller Cimentaciones de Latinoamérica, S.A. de C.V., Mexico.
4. 2020 Numerical analyses of lining systems for a repository in claystone based on a time-dependent non-local constitutive model. Prepared for BGE Technology, Germany.
5. 2021 Computational analyses of Dam I failure at the Corrego de Feijao en Brumadinho. Prepared for Vale S.A., Brazil.
6. 2021 Implementation of a material model for the mechanical, thermal, and hydraulic behaviour of claystone. Prepared for BGE Technology, Germany.
7. ongoing Technical consulting to ICA Constructora de Infraestructura S.A. de C.V. on the works for the Section IV of the Tren Maya.

Last updated: February 12, 2023