Benoît Pardoen

Associate scientist in geomechanics
PhD in Engineering Sciences and geomechanics

ENTPE, University of Lyon, French National School of State Public Works.
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Born on the 9th December 1985, Belgian

FORMATION AND PROFESSIONAL EXPERIENCE

Actual	**Associate Scientist** (CR) **in geomechanics, civil engineering**, tunnels and underground works at University of Lyon, French National School of State Public Works (ENTPE), France. Tribology and Systems Dynamics Laboratory (LTDS, UMR CNRS 5513). Geomaterials and Sustainable Constructions (GCD).
2018-2019	**Associate Professor** in **geotechnical engineering** at Université catholique de Louvain (UCL), Belgium Louvain School of Engineering (EPL). Institute of Mechanics, Materials, and Civil Engineering (iMMC). Civil and environmental engineering (GCE).
2017	**Postdoctoral research** at CNRS, Université Grenoble Alpes, Laboratoire 3SR, Grenoble, France. Subject: **"Accounting for the spatial variability of argillite's properties through a multi-scale numeric-experimental approach"**, Project: NEEDS MiPor, CNRS, France. Supervisors: Pierre Bésuelle, Stefano Dal Pont, Jacques Desrues, Philippe Cosenza.
2016	**Postdoctoral research** at Université Laval, Québec, Canada. Subject: **"Numerical modelling of interfaces in rockfill dams"**. Project: Industrial Research Chair CRSNG / Hydro-Québec, Canada. Supervisor: Pr. Jean-Marie Konrad.
2014-2015	Private teaching in higher education, SA Cogito, Brussels, Belgium.
2011-2015	**PhD** thesis in geomechanics at University of Liège, ULg, Belgium (GEO³ sector, ArGEnCo dep.). Scholarship: FRIA, F.R.S.-FNRS scholarship holder, Brussels, Belgium. Title: "**Hydro-mechanical analysis of the fracturing induced by the excavation of nuclear waste repository galleries using shear banding**." Defense: 16 November 2015, ULg, Liège, Belgium.
2009-2011	**Geotechnical engineer**, geo-engineering department at Tractebel Engineering, GDF SUEZ group, Brussels, Belgium. Function: Earthworks and soil decontamination studies, geomaterials quality supervisor for high-speed rail line.
2004-2009	**Bachelor and Master degrees** in civil engineering, specialization in geotechnics, Université catholique de Louvain, UCL, Belgium. Graduating with High Honors (*magna cum laude*). Master thesis title: "Interpretation of dynamic pile load test results: reliability and dispersion.". Supervisor: Pr. Alain Holeyman, UCL (GCE sector). Scholarship: Responsabilité Sociale de l'Entreprise (RSE), GDF SUEZ group.
2003-2004	**Study abroad program**, Crescent School District, Joyce, Washington state, USA.

1997-2003 High school, mathematical-sciences-languages orientation, C.E.P.E.S., Jodoigne, Belgium. Graduating with High Honors (*magna cum laude*), first prize in mathematics.

AWARDS AND INVITED LECTURES

Prizes: - **Best international conference article award** for the paper [34] at iCGMGE 2022, Sydney, Australia.

PhD prizes (4):
- Laureate of **Pierre Londe** prize 2016, Comité Français de Mécanique des Roches, CFMR, France.
- Laureate of the **McKinsey & Company** Prize 2016, FNRS, Belgium.
- Laureate of the **Jacques Verdeyen** prize of soil mechanics (period 2014-2018), Bureau de Contrôle Technique pour la Construction **SECO**, Belgium.
- Finalist of the **ALERT** Ioannis Vardoulakis PhD prize 2016, France.

Invited lectures (6):

- Considering argillaceous rock microstructure and behaviour in a FEMxFEM double scale model: Short-term damage and long-term deformation induced by underground excavations. Short courses on Challenges and Innovations in Geomechanics, Mechanics of geomaterials: from micro to macro, IACMAG, 2022, Grenoble, France.
- Jacques Verdeyen prize awards ceremony, 2019, SECO, Brussel, Belgium.
- Journée Scientifique & Technique CFMS-CFMR, Microstructure de sols et des roches argileux-conséquences pour l'ingénieur, P. Cosenza, P. Delage, 2018, CNAM, Paris, France.
- Pierre Londe prize. (1) Awards ceremony 2016 of CFMR and (2) Journées Nationales de Géotechnique et de Géologie de l'Ingénieur 2018 (JNGG2018). Co-organised by Ifsttar and Ecole des Ponts ParisTech (ENPC), Paris, France.
- McKinsey annual awards ceremony, 2016, FNRS, Brussel, Belgium.

RESEARCH PROJECTS AND SUPERVISIONS

Funded research projects:

2024-2028 **CSC** 2024. *"Modelling the **impact of mineral composition on the hydromechanical properties of rocks**: from hydrothermal alteration to the large-scale behaviour of reservoirs"*. PhD scholarship funding, 100.000 €.

2024-2025 **LTDS** 2024. *"Analyse du **comportement des bétons renforcés de textiles** pour des structures de bâtiment durables : Simulation numérique multi-échelles et évaluation de l'impact environnemental"*. Research funding, 20.000 €.

2024-2027 **ANR** JCJC 2023. *"**Multi-Scale numerical analysis of damage in heterogeneous rocks** applied to underground works in an energy transition context"*. Research and PhD scholarship funding, 226.000 € (total value of the project: 602.000 €).

2023-2026 **Andra**. *"**Underground stability** and induced mechanisms during the **removal of liner segments** in deep tunnels" (FR: Stabilité souterraine et mécanismes induits lors de la dépose de voussoirs dans les tunnels à grande profondeur)*. Research project funding with industrial/scientist partner. 75.600 € (total value of the project: 343.772 €).

2023 **TEC 21**. *"The use of **geothermal energy** to prevent **road** pavement **icing** and damage in cold climate areas"*. Laboratory of Excellence for mechanical and process engineering, Support for innovation. Proof of concept / R&D internships, 4.000 €.

2022-2025 **ITPE**. *"**Underground stability** and induced mechanisms during the **removal of liner segments** in deep tunnels"*. PhD scholarship funding, 100.000 €.

2022-2025 **Andra**. *"**Short- and long-term stability of gallery intersections** drilled at great depth in the Callovo-Oxfordian claystone"*. Research project funding with industrial/scientist partner. 200.775 € (total value of the project: 401.550 €).

2020-2024 **CSC** 2020. *"**Creep and damage** behaviour of deep underground structures"*. PhD scholarship funding, 100.000 €.

2020-2021 **IDEX Lyon**, Impulsion 2020. *"**Multi-scale behaviour** and **damage** of **heterogeneous rocks** around underground excavations"*. Research and postdoc salary funding, 57.000 €.

2019 **CDR-FNRS**-18. *"**Multi-scale analysis** of **heterogeneous** behaviour and strength of rocks"*, Research funding, 55.730 €.

2018 **UCL Seed funding FSR** 2017. *"Influence of inherent rock **heterogeneity** and **properties variability** on underground rupture based on a **multi-scale hydro-mechanical numerical approach**"*, PhD funding, 78.000 €.

Postdoctoral research supervisions:

2020-2022 Title: *"**Microscale** and **multi-scale behaviour** modelling of damage in heterogeneous rocks around underground excavations"* by C. Mourlas, University of Lyon, ENTPE, LTDS.
Subjects: micromechanics, double-scale modelling, rock behaviour, damage, excavation stability.

PhD thesis supervisions:

2024-present Title: *"Modelling the **impact of mineral composition on the hydromechanical properties of rocks**: from hydrothermal alteration to the large-scale behaviour of reservoirs"* by F. Tong, University of Lyon.
Subjects: geothermy, rock alteration, underground flow, reservoir quality, numerical modelling.
Co-supervision: A. Fabbri, University of Lyon (ENTPE, LTDS).

2024-present Title: *"**Multi-Scale hydromechanical numerical analysis of damage in heterogeneous rocks** applied to underground structures"* by E. Boubakeur, University of Lyon.
Subjects: micromechanics, double-scale modelling, rock behaviour, damage, excavation stability.
Co-supervision: J.C. Morel, CNRS, University of Lyon (ENTPE, LTDS).

2022-present Title: *"**Underground stability** and induced mechanisms during the **removal of liner segments** in deep tunnels"* by J. Michalon, University of Lyon.
Subjects: geomechanics, underground excavation, gallery support, underground stability, damage, numerical modelling.
Co-supervision: D. Branque, University of Lyon (ENTPE, LTDS).

2021-2024 Title: *"**Short- and long-term stability of gallery intersections** drilled at great depth in the Callovo-Oxfordian claystone"* by P. Rapanakis, University of Lyon.
Subjects: geomechanics, underground excavation, gallery intersections, underground stability, gallery support, damage, numerical modelling.
Co-supervision: D. Branque, University of Lyon (ENTPE, LTDS).

2020-2023 Title: *"**Time-dependent hydromechanical behaviour** of Callovo-Oxfordian claystone by analytical and **multiscale** numerical methods"* by Y. Sun, Univ. of Lyon.
Subjects: multiphysics coupling, underground excavation, viscosity, time-dependent behaviour.
Co-supervision: K.K. Wong, University of Lyon (CNRS, ENTPE, LTDS).

2019-2023 Title: *"Study on **Thermo-Hydro-Mechanical** Coupling for Compacted Soil Subjected to **Cyclic Freeze-Thaw** Process"* by X. Li, University of Lyon.
Subjects: multiphysics coupling, multiphasic media, poromechanics, freezing-thawing.
Co-supervision: K.K. Wong, A. Fabbri, University of Lyon (ENTPE, LTDS).

Master thesis supervisions:

2023-2024 Title: *"**Multi-scale hydromechanical** modelling of the **behaviour** of underground galleries in rocks"* by E. Boubakeur, University of Lyon, ENTPE.
Subjects: micromechanics, hydromechanical, damage, permeability evolution, water flow, double-scale modelling, underground excavation.

2022-2023 Title: *"Investigation on the **regolith formation on asteroids** surface through a **small-scale modelling** approach"* by S. Mortadi, University Grenoble Alpes - University of Lyon.
Subjects: extra-terrestrial geomechanics, microscale properties, numerical modelling.

2022-2023 Title: *"The use of **geothermal energy** to prevent **road** pavement **icing** and damage in cold climate areas"* by E. Ilari, University Grenoble Alpes - University of Lyon.
Subjects: geothermal energy, frozen soils, surface de-icing, numerical modelling.

2021-2022 Title: *"**Stabilité souterraine** et mécanismes induits lors de la **dépose de voussoirs** dans les tunnels à grande profondeur"* by J. Michalon, University of Lyon, ENTPE.
Subjects: geomechanics, underground excavation, galleries support removal, numerical modelling.

2020-2021 Title: *"Modélisation de l'influence de l'**anisotropie matérielle** de l'argilite du Callovo-Oxfordien sur l'**endommagement à petite et grande échelle**"*
by C. Mestre, University of Lyon, ENTPE.
Subjects: micromechanics, anisotropy, damage, double-scale modelling, underground excavation.

2019-2020 Title: *"Modélisation de l'impact du **phasage des travaux** sur le développement de zones endommagées autour d'ouvrages souterrains de grande portée"* by M. Briat, Univ of Lyon.
Subjects: grand Paris Express, underground excavation, construction phasing, soil and rock damage.
Co-supervision: D. Branque, University of Lyon (ENTPE, LTDS), follow up of Arcadis.

2018-2019 Title: *"Unravelling the strength of **hydrothermally-altered** volcanic rocks: from micromechanical properties of their **mineral assemblages** to large scale modelling"* by M. Musyck, UCL.
Subjects: rock alteration, small to large scale modelling of rock, microscale properties of rocks.

2017-2018 Title: *"**Caractérisation expérimentale double-échelle** d'une roche magmatique : comparaison entre **propriétés microscopiques** et **macroscopiques**"* by M. Kubushishi, UCL-ECAM.
Subjects: rock mechanics, rock testing, macro- and microscopic properties, SEM, nano-indentation.

2014-2015 Title: *"**Hydromechanical modelling** of a ventilation test in the Underground Research Laboratory of ANDRA"* by T. Công-Tâm, supervised by Pr. F. Collin, ULg.
Subjects: numerical modelling, hydromechanical coupling, gallery excavation, material drainage, air-rock interaction, partial saturation, etc.

PUBLICATIONS

Articles in international journals:

[1] Sun, Y., Wong, H., Deleruyelle, F., Pardoen, B., Dufour, N.. Numerical simulation of sensitive analysis and probabilistic study on temporal evolution of the EDZ. Acta Geotechnica. Under preparation.

[2] Mourlas, C., Pardoen, B. Influence of the material anisotropy of the Callovo-Oxfordian argillaceous rock on small- and large-scale damage. Computers and Geotechnics. Under preparation.

[3] Rapanakis, P., Pardoen, B., Branque, D., Cornet, J.S., Armand, G. Modelling the mechanical behaviour of an anisotropic clay rock around gallery intersections: Effect of the support properties. Tunnelling and Underground Space Technology. Under preparation.

[4] Michalon, J., Pardoen, B., Branque, D., Armand, G. Modelling the cracking mechanism of transversely isotropic rocks using a 3D Grain-Based Model: A case study of the Callovo-Oxfordian clay rock. Rock Mechanics and Rock Engineering. Submitted.

[5] Li, X., Fabbri, A., Wong, H.K.K., Pardoen, B., Liu, Y., Traore, L.B. Modelling of freeze-thaw-induced plastic behaviour in compacted soil. International Journal for Numerical and Analytical Methods in Geomechanics. Submitted.

[6] Ma, Y., Weng, X., Sun, Y., Ye, F., Ma, Y., Wong, H.K.K., Pardoen, B. (2025). Numerical simulation of the complete instability process of shield tunnel excavation face based on SPH method. Chinese Journal of Geotechnical Engineering.

[7] Pardoen, B., Konrad, J.-M. (2025). Modelling volumetric and strength behaviours of sheared contact zone between dam soils. Dams and Reservoirs. doi: 10.1680/jdare.24.00102.

[8] Rapanakis, P., Pardoen, B., Branque, D., Cornet, J.S., Armand, G. (2024). A cross-anisotropic constitutive framework for modelling gallery intersections excavated in the Callovo-Oxfordian claystone. Computers and Geotechnics 176:106761. doi: 10.1016/j.compgeo.2024.106761.

[9] Sun, Y., Pardoen, B., Wong, H.K.K. (2024). Studying the air ventilation effect on the hydromechanical behaviour of cracked rock media around large-scale gallery using a double-scale FE^2 model. Computers and Geotechnics. 169:106245. doi: 10.1016/j.compgeo.2024.106245.

[10] Liu, Y., Fabbri, A., Wong, H.K.K., Traore, L.B., Li, X., Pardoen, B. (2023). Experimental study on the freezing-thawing behavior of compacted earth. Construction and Building Materials. 404:133130.

[11] Sun, Y., Pardoen, B., Wong, H. (2023). Modelling the creep behaviour and induced failure of clay rock from microscale viscosity to large-scale time-dependant gallery convergences using a multiscale numerical approach. Computers and Geotechnics. 162:105691. doi: 10.1016/j.compgeo.2023.105691.

[12] Sun, Y., Pardoen, B., van den Eijnden, A.P., Wong, H. (2023). Modelling the time-dependent mechanical behaviour of clay rocks based on meso- and micro-structural viscous properties. International Journal for Numerical and Analytical Methods in Geomechanics. 47(17):3177-3208. doi: 10.1002/nag.3617.

[13] Sun, Y., Wong, H., Pardoen, B., Deleruyelle, F., Dufour, N. (2023). Long-term hydromechanical behaviour of a deep cavity taking into account a simplified sequence of life stages. Computers and Geotechnics. 156:105256. doi: 10.1016/j.compgeo.2023.105256.

[14] Mourlas, C., Pardoen, B., Bésuelle, P. (2023). Large-scale failure prediction of clay rock from small-scale damage mechanisms of the rock medium using multiscale modelling. International Journal for Numerical and Analytical Methods in Geomechanics. 47(7):1254-1288. doi: 10.1002/nag.3513.

[15] Li, X., Liu, Y., Wong, H., Pardoen, B., Fabbri, A., McGregor, F., & Liu, E. (2022). Analytical and numerical studies on the behavior of a freezing soil layer. Cold Regions Science and Technology. 198:103538. doi: 10.1016/j.coldregions.2022.103538.

[16] Sun, Y., Wong, H., Pardoen, B., Deleruyelle, F., Dufour, N., Branque, D., & Leo, C. (2021). Analytical study of post-closure behaviour of a deep spherical cavity in a dilatant viscoplastic rock mass. Computers and Geotechnics, 139(3):104419.

[17] Collin, F., Kotronis, P., & Pardoen, B. (2021). Numerical Modeling of Multiphysics Couplings and Strain Localization. Book chapter 7 in "Instabilities Modeling in Geomechanics", SCIENCES, ISTE (Eds. J. Sulem, I. Stefanou, G. Pijaudier-Cabot), ISBN 9781789450002.

[18] Pardoen, B., Bésuelle, P., Dal Pont, S., Cosenza, P., & Desrues, J. (2020). Accounting for Small-Scale Heterogeneity and Variability of Clay Rock in Homogenised Numerical Micromechanical Response and Microcracking. Rock Mechanics and Rock Engineering. 53:2727-2746. doi: 10.1007/s00603-020-02066-7.

[19] Collin, F., Kotronis, P., & Pardoen, B. (2019). Modélisation numérique de couplages multiphysiques et de la localisation des déformations. 27th ALERT Doctoral School 2016. Book chapter 6 in "Modélisation des instabilités en géomécanique" and "Géomécanique" traité SCIENCES, ISTE (Eds. J. Sulem, I. Stefanou, G. Viggiani et G. Pijaudier-Cabot), ISBN 978-2-915913-29-3.

[20] Pardoen, B., & Konrad, J-M. (2019). Numerical Modeling of Zoned Rockfill Dam during Construction Considering Granular Interface Behavior. Journal of Geotechnical and Geoenvironmental Engineering (ASCE). 145(3), doi: 10.1061/(ASCE)GT.1943-5606.0001997.

[21] Pardoen, B., & Collin, F. (2017). Modelling the influence of strain localisation and viscosity on the behaviour of underground drifts drilled in claystone. Computers and Geotechnics, 85:351-367, doi: 10.1016/j.compgeo.2016.05.017.

[22] Pardoen, B., Talandier, J., & Collin, F (2016). Permeability evolution and water transfer in the excavation damaged zone of a ventilated gallery. International Journal of Rock Mechanics and Mining Sciences, 85:192-208. doi: 10.1016/j.ijrmms.2016.03.007.

[23] Pardoen, B., Seyedi, D. M., & Collin, F. (2015). Shear banding modelling in cross-anisotropic rocks. International Journal of Solids and Structures, 72:63-87. doi: 10.1016/j.ijsolstr.2015.07.012.

[24] Pardoen, B., Levasseur, S., & Collin, F. (2015). Using Local Second Gradient Model and Shear Strain Localisation to Model the Excavation Damaged Zone in Unsaturated Claystone. Rock Mechanics and Rock Engineering, 48(2):691-714. doi: 10.1007/s00603-014-0580-2.

[25] Charlier, R., Collin, F., Pardoen, B., Talandier, J., Radu, J. P., & Gerard, P. (2013). An unsaturated hydro-mechanical modelling of two in-situ experiments in Callovo-Oxfordian argillite. Engineering Geology, 165:46-63. doi: 10.1016/j.enggeo.2013.05.021.

PhD thesis:

[26] Pardoen, B. (2015). Hydro-mechanical analysis of the fracturing induced by the excavation of nuclear waste repository galleries using shear banding. PhD thesis, Faculty of Applied Sciences, University of Liège, Liège, Belgium.

Proceedings of scientific conferences, papers published in books:

[27] Pardoen, B., Sun, Y., Wong, H. (2025). A two-scale numerical modelling of time-dependent mechanical behaviour of viscous clay rocks. 17th international conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), Hong Kong, China.

[28] Michalon, J., Pardoen, B., Branque, D., Jaber, J., Armand, G. (2024). Modelling transversely isotropic mechanical behaviour of COx claystone with DEM. ISRM European Rock Mechanics Symposium (Eurock 2024, Alicant, Spain), in book New Challenges in Rock Mechanics and Rock Engineering, Eds. R. Tomás, M. Cano, A. Riquelme, J. L. Pastor, D. Benavente, S. Ordóñez, CRC Press, doi: 10.1201/9781003429234.

[29] Rapanakis, P., Pardoen, B., Branque, D., Cornet, J., Armand, G. (2024). Analysis of a T-shaped gallery intersection drilled in anisotropic claystone. ISRM European Rock Mechanics Symposium (Eurock 2024, Alicant, Spain), in book New Challenges in Rock Mechanics and Rock Engineering, Eds. R. Tomás, M. Cano, A. Riquelme, J. L. Pastor, D. Benavente, S. Ordóñez, CRC Press, doi: 10.1201/9781003429234.

[30] Pardoen, B., Mourlas, C. (2023). Multiscale modelling of rock behaviour around underground works with an insight of microstructural characteristics influence. 15th International ISRM Congress on Rock Mechanics 2023 & 72nd Geomechanics Colloquium. Schubert & Kluckner (eds.), pp. 1711-1716, Salzburg, Austria.

[31] Rapanakis, P., Branque, D., Pardoen, B. (2023). Short- and long-term stability of gallery intersections excavated at great depth in the Callovo-Oxfordian claystone (Stabilité à court et long termes d'intersections de galeries creusées à grande profondeur dans l'argilite du Callovo-Oxfordien). Revues TES n°285, Association Française des Tunnels et de l'Espace Souterrain (AFTES), France.

[32] Rapanakis, P., Pardoen, B., Branque, D., Cornet, J.S., Armand, G. (2023). A three-dimensional numerical modelling of an underground gallery excavation considering the influence of sedimentary rock cross-anisotropy. 10th European Conference on Numerical Methods in Geotechnical Engineering (NUMGE 2023), Imperial College London, UK.

[33] Sun, Y., Pardoen, B., van den Eijnden, A.P., Wong, H. (2022). A micro-mechanics based creep model for claystone. 2nd International Conference on Geomechanics and Geo-environmental Engineering (iCGMGE-2022), 6th GCSTMR World Congress, Sydney, Australia.

[34] Pardoen, B., Mourlas, C. (2022). Multiscale numerical analysis of damage in heterogeneous rocks applied to underground works. 2nd International Conference on Geomechanics and Geo-environmental Engineering (iCGMGE-2022), 6th GCSTMR World Congress, Sydney, Australia.

[35] Sun, Y., Wong, H.K.K., Pardoen, B., Deleruyelle, F., Dufour, N., Branque, D., Leo, C.J. (2022). Etude analytique du comportement post-fermeture d'une cavité sphérique profonde dans un massif rocheux viscoplastique dilatant. 11e Journées Nationales de Géotechnique et de Géologie de l'Ingénieur (JNGG-22), Lyon, France, pp. 1101-1108.

[36] Pardoen, B., Bésuelle, P., Dal Pont, S., Cosenza, P., Desrues, J. (2021). Effect of claystone small-scale characteristics on the variability of micromechanical response and on microcracking modelling. In: Barla, M., Di Donna, A., Sterpi, D. (Eds.). Challenges and innovations in geomechanics. 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), LNCE 125, pp. 1–9, doi: 10.1007/978-3-030-64514-4_52.

[37] Pardoen, B., Collin, F., Bésuelle, P., Charlier, R., Talandier, J., Dal Pont, S., Cosenza, P., van den Eijnden, A. P., Desrues, J. (2020). Modelling the multiscale behaviour of claystone: deformation, rupture, and hydro-mechanical phenomena around underground galleries. In J.S. McCartney and I. Tomac (Eds.). 2nd International Conference on Energy Geotechnics (ICEGT). E3S Web of Conferences 205, 10003. doi: 10.1051/e3sconf/202020510003.

[38] Pardoen, B., Dal Pont, S., Desrues, J., Bésuelle, P., Prêt, D., & Cosenza, P. (2018). Heterogeneity and Variability of Clay Rock Microstructure in a Hydro-Mechanical Double Scale FEM × FEM Analysis. In: Giovine P., Mariano P., Mortara G. (Eds.) Micro to MACRO Mathematical Modelling in Soil Mechanics (pp. 247-256). Trends in Mathematics. Birkhäuser, Cham, Springer. doi: 10.1007/978-3-319-99474-1_25.

[39] Collin, F., Kotronis, P., & Pardoen, B. (2016). Numerical modelling of Multiphysics couplings and strain localization. In Book: ALERT Doctoral School 2016, Modelling of instabilities and bifurcation in Geomechanics, Alert Geomaterials, The Alliance of Laboratories in Europe for Education, Research and Technology (pp. 247-292).

[40] Collin, F., Talandier, J., & Pardoen, B. (2016). Modelling an in-situ ventilation test in the Andra Underground Research Facilities. 3rd European Conference on Unsaturated Soils, E-UNSAT 2016 (pp. 1-8). doi: 10.1051/e3sconf/20160904003.

[41] Pardoen, B., Levasseur, S., & Collin, F. (2015). Using shear strain localisation to model the fracturing around gallery in unsaturated Callovo-Oxfordian claystone. In K. T., Chau & J., Zhao (Eds.), Bifurcation and Degradation of Geomaterials in the New Millennium. Springer Series in Geomechanics and Geoengineering (pp. 285-291). Springer. doi: 10.1007/978-3-319-13506-9_41.

[42] Pardoen, B., Levasseur, S., & Collin, F. (2014). Excavation damaged zone modelling including hydraulic permeability evolution in unsaturated argillaceous rock. In N., Khalili, A. R., Russell, & A., Khoshghalb (Eds.), Unsaturated Soils: Research & Applications (pp. 1387-1393). CRC Press, Taylor and Francis Group, London, UK. doi: 10.1201/b17034-203.

[43] Collin, F., & Pardoen, B. (2013). Excavation damaged zone modelling in claystone with coupled second gradient model. In Q., Yang, J. M., Zhang, H., Zheng, & Y., Yao (Eds.), Constitutive Modeling of Geomaterials, Advances and applications, Springer Series in Geomechanics and Geoengineering (pp. 313-317), Berlin Heidelberg. Springer. doi: 10.1007/978-3-642-32814-5_42.

[44] Pardoen, B., Talandier, J., Charlier, R., Collin, F., & Radu, J.-P. (2012). Hydro and Hydro-Mechanical Modelling of Ventilation Test in Clayey Rocks. In C., Mancuso, C., Jommi, & F., D'Onza (Eds.), Unsaturated Soils: Research and Applications (pp. 325-332). Springer, Heidelberg, Germany. doi: 10.1007/978-3-642-31343-1_41.

[45] Pardoen, B., Talandier, J., Charlier, R., Collin, F., & Radu, J.-P. (2012). Modélisation numérique d'un essai de ventilation in situ. In F., Skoczylas, C. A., Davy, F., Agostini, & N., Burlion (Eds.), Propriétés de transfert des géomatériaux, Transfert 2012 (pp. 420-428), Ecole centrale de Lille 20-22 mars 2012, ISBN 978-2-915913-29-3.

Research reports:

[46] Michalon, J., Pardoen, B., Branque, D. (2024). Underground stability and mechanisms induced during the removal of segments in deep tunnels. Université de Lyon, ENTPE, LTDS, France.

[47] Rapanakis, P., Pardoen, B., Branque, D. (2023). Short- and long-term stability of gallery intersections drilled at great depth in the Callovo-Oxfordian claystone: Plastic zone investigation of deep intersecting galleries drilled in the Callovo-Oxfordian claystone. Université de Lyon, ENTPE, LTDS, France.

[48] Rapanakis, P., Pardoen, B., Branque, D. (2022). Short- and long-term stability of gallery intersections drilled at great depth in the Callovo-Oxfordian claystone: Definition of the calculation code and validation of the rheological model within the framework of a 2D-3D approach. Université de Lyon, ENTPE, LTDS, France.

[49] Pardoen, B., & Konrad, J-M (2017). Modelling volumetric and strength behaviours of sheared contact zone between dam soils. Université Laval, Québec, Canada.

[50] Pardoen, B., & Konrad, J.-M. (2016). Modélisation numérique des interfaces dans les barrages en enrochement. Université Laval, Québec, Canada.

[51] Charlier, R., Pardoen, B., Salehnia, F., Dieudonné, A.-C., Collin, F., & Dupuis, H. (2016). Modelling the behaviour of host rock for nuclear waste. Reflexions, le site de vulgarisation de l'Université de Liège. ULg, Belgium. url: http://reflexions.ulg.ac.be/cms/c_410969/en/modelling-the-behaviour-of-host-rock-for-nuclear-waste.

[52] Pardoen, B., Collin, F., Levasseur, S., & Charlier, R. (2014). Andra - GL Geomechanics - Transversal action " Models " Phase 3: Underground structure modelling. ULg, Liège, Belgium.

[53] Pardoen, B., Collin, F., Levasseur, S., & Charlier, R. (2013). Andra - GL Geomechanics - Transversal action " Models " Phase 2: Test cases with simple loading paths. ULg, Liège, Belgium.

[54] Collin, F., Charlier, R., Radu, J.-P., & Pardoen, B. (2012). Test de fondation filante avec la loi Cam-Clay pour EDF. Comparaison Lagamine – Code_Aster. ULg, Liège, Belgium.

[55] Pardoen, B., Charlier, R., & Radu, J.-P. (2011). Modélisation numérique de l'expérience SDZ pour l'Andra. ULg, Liège, Belgium.

[56] Pardoen, B. (2009). Interprétation des résultats de l'essai de chargement dynamique de pieux : fiabilité et dispersion. Mémoire de Maîtrise, Ecole polytechnique de Louvain, Université catholique de Louvain, Louvain-la-Neuve, Belgium.

RESEARCH COMMUNICATIONS

Oral presentations and posters in scientific conferences:

[57] Michalon, J., Pardoen, B., Branque, D. (2024). Modelling transversely isotropic mechanical behaviour of COx1 claystone with DEM. PhD symposium of Centre d'Etudes des Tunnels (CETu) (14/10/2024).

[58] Michalon, J., Pardoen, B., Branque, D. (2024). Underground stability and mechanisms induced during the removal of segments in deep tunnels. PhD symposium of LTDS laboratory, Univeristy of Lyon (21/03/2024).

[59] Michalon, J., Pardoen, B., Branque, D. (2023). Stabilité souterraine et mécanismes induits lors de la dépose de voussoirs dans les tunnels à grande profondeur. PhD symposium of Association Française des Tunnels et de l'Espace Souterrain (AFTES), Paris.

[60] Li, X., Pardoen, B., Wong, H.K.K., Fabbri, A. (2023). Comportement des sols lors du processus de gel-dégel. Séminaire Café des Sciences, ENTPE, Université de Lyon.

[61] Di Donna, A., Pardoen, B. (2023). The use of geothermal energy to prevent road pavement icing and damage in cold climate areas. Symposium on Energy Geotechnics, Delft, Netherlands.

[62] Michalon, J., Pardoen, B., Branque, D., Jaber, J., Armand, G. (2023). 3D modelling of clay rock cracking and anisotropic mechanical behaviour using a discrete element approach. Poster session presented at the 33rd ALERT Geomaterials Workshop 2023, Aussois, France.

[63] Ilari, E., Pardoen, B., Di Donna, A. (2023). The use of geothermal energy to prevent road pavement icing and damage in cold climate areas. Poster session presented at the 33rd ALERT Geomaterials Workshop 2023, Aussois, France.

[64] Michalon, J., Pardoen, B., Branque, D. (2023). Stabilité souterraine et mécanismes induits lors de la dépose de voussoirs dans les tunnels à grande profondeur. Présentation lors de la réunion annuelle de l'équipe GCD, LTDS, à l'ENISE, Saint Etienne, France (10/07/2023).

[65] Pardoen, B. (2023). Rock multi-scale modelling from microstructural properties, mesoscale behaviour, and macroscale application in a FE^2 double-scale framework. SImulation et Modélisation pour l'Ingénierie Virtuelle (SIMIV) seminar.

[66] Rapanakis, P., Pardoen, B., Branque, B. (2023). Short- and long-term stability of galleries intersections drilled at great depth in the Callovo-Oxfordian claystone. PhD symposium of LTDS laboratory, Univeristy of Lyon.

[67] Li, X., Pardoen, B., Wong, H.K.K., Fabbri, A. (2023). Comportement des sols pendant le processus de congélation avec changement de phase. PhD symposium of LTDS laboratory, Univeristy of Lyon.

[68] Pardoen, B., Mourlas, C. (2023). Multi-scale modelling of rock behaviour around underground works with an insight of microstructural characteristics influence. 15th International ISRM Congress (ISRM 2023): Challenges in Rock Mechanics and Rock Engineering, Salzburg, Austria.

[69] Sun, Y., Wong, K.K., Pardoen, B., Deleruyelle, F., Dufour, N., Branque, D., Leo, C.J. (2022). Analytical modelling of irreversible dilative creep behaviour of underground cavities. 2nd International Conference on Geomechanics and Geo-environmental Engineering (iCGMGE-2022), 6th GCSTMR World Congress, Sydney, Australia.

[70] Li, X., Wong, H.K.K., Pardoen, B., Fabbri, A., Liu, Y. (2022). Numerical studies on the behavior of a freezing soil layer. 2nd International Conference on Geomechanics and Geo-environmental Engineering (iCGMGE-2022), 6th GCSTMR World Congress, Sydney, Australia.

[71] Li, X., Pardoen, B., Wong, H.K.K., Fabbri, A. (2022). Numerical modelling of thermo-hydro-mechanical coupling in freezing porous medium in the finite deformation range. Third International Workshop on the Finite Element Code Lagamine, Lagashop 2022, Grenoble, France.

[72] Sun, Y., Pardoen, B., Wong, H.K.K. (2022). A multiscale modelling of time-dependent mechanical behaviour of claystone based on microstructural viscous properties. Third International Workshop on the Finite Element Code Lagamine, Lagashop 2022, Grenoble, France.

[73] Mourlas, C., Pardoen, B. (2022). Multi-scale modelling for studying the variability and heterogeneity of clay rock behaviour and the damage caused by underground excavations. Third International Workshop on the Finite Element Code Lagamine, Lagashop 2022, Grenoble, France.

[74] Sun Y., Pardoen B., Wong K.K. (2022). Model the time-dependent mechanical behaviour of clayey rock from its microscale characteristics. PhD symposium of LTDS laboratory, Univeristy of Lyon.

[75] Pardoen, B., Bésuelle, P., Dal Pont, S., Cosenza, P., Desrues, J. (2022). Considering the microstructural characteristics of heterogeneous argillaceous rock in a double-scale numerical modelling. 8th International Conference on Clays in natural and engineered barriers for radioactive waste confinement, Nancy, France.

[76] Pardoen, B., Mourlas, C., Bésuelle, P., Dal Pont, S., Cosenza, P., Desrues, J. (2022). Effect of claystone microscale characteristics on the damage induced by underground drilling with double-scale numerical modelling. 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), Torino, Italy.

[77] Pardoen, B. (2022). Considering argillaceous rock microstructure and behaviour in a FEMxFEM double scale model: Short-term damage and long-term deformation induced by underground excavations. Invited lecture in Short courses on Challenges and Innovations in Geomechanics, Mechanics of geomaterials: from micro to macro, in 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), Grenoble, France.

[78] Pardoen, B., Collin, F., Bésuelle, P., Charlier, R., Talandier, J., Dal Pont, S., Cosenza, P., van den Eijnden, A. P., Desrues, J. (2022). Modelling the multiscale behaviour of claystone: deformation, rupture, and hydro-mechanical phenomena around underground galleries. 2nd International Conference on Energy Geotechnics. ICEGT2020. La Jolla, California, USA.

[79] Rapanakis, P., Pardoen, B., Branque, D. (2022). Short- and long-term stability of gallery intersections drilled at great depth in the Callovo-Oxfordian claystone. Research presentation at project meeting, Andra, Bure, France.

[80] Mourlas, C., Pardoen, B. (2021). Effects of microscale clay damage characteristics on large scale failure mechanisms of clay-rock using multiscale modelling. ALERT Geomaterials Workshop 2021, Aussois, France.

[81] Mourlas, C., Pardoen, B. (2021). Prediction of large-scale failures of rock from small-scale characteristics of the rock medium using multiscale modelling. Séance technique : Avancées récentes sur la modélisation numérique du comportement des roches. CFMR.

[82] Dansereau V., Pardoen B., Bésuelle P., Dal Pont S., Desrues J. (2019). Double-scale FEM modelling applied to clay rocks. 15th International Conference on Computational Plasticity, COMPLAS 2019, Barcelona, Spain.

[83] Bésuelle P., Pardoen B., Dansereau V., Dal Pont S., Desrues J. (2019). Double-scale hydro-mechanical modelling of clay rocks. Joint GeoMech-M2UN workshop on Upscaling for Strategic Materials, Montpellier, France.

[84] Collin F., Charlier R., Pardoen B. (2019). Rôle de la zone endommagée sur la convergence des galeries de stockage, modélisation numérique d'expériences dans le laboratoire souterrain de Bure. Journée d'étude SBGIMR "Le stockage géologique de déchets nucléaires", Liège, Belgium.

[85] Pardoen B., Bésuelle P., Desrues J., Dal Pont S., & Cosenza P. (2018). Prise en compte de l'hétérogénéité microstructurale des roches argileuses au travers d'un modèle hydromécanique à double échelle. Journée Scientifique & Technique CFMS-CFMR, « Microstructure de sols et des roches argileux – conséquences pour l'ingénieur », P. Cosenza, P. Delage, CNAM, Paris, France.

[86] Pardoen, B. (2018). Hydro-mechanical analysis of the fracturing induced by the excavation of nuclear waste repository galleries using shear banding. Invited speaker, Prix Pierre Londe CFMR 2016. Journées Nationales de Géotechnique et de Géologie de l'Ingénieur (JNGG2018). Co-organised by Ifsttar and Ecole des Ponts ParisTech (ENPC), Marne-la-Vallée, France.

[87] Bésuelle, P., Pardoen, B., Desrues, J., Dal Pont, S., & Cosenza, P. (2018). Argillaceous rock microstructure considering variability and heterogeneity for double scale modelling with hydro-mechanical coupling. 16th European Mechanics of Materials Conference (EMMC16), Ecole Centrale of Nantes and GeM Institute, Nantes, France.

[88] Pardoen, B., Bésuelle, P., Desrues, J., Dal Pont, S., & Cosenza P. (2018). Accounting for microstructure heterogeneity of clay rocks in a hydro-mechanical double scale model. Second International Workshop on the Finite Element Code LAGAMINE (LAGASHOP 2018). TU Delft, the Netherlands.

[89] Pardoen, B., Bésuelle, P., Desrues, J., & Dal Pont, S. (2018). Double-scale modelling of the hydro-mechanical behaviour of a clay rock including the effect of the microstructure. Workshop on Advanced modelling in particulate and cohesive materials, GDRI GeoMech, Lyon, France.

[90] Pardoen, B., Dal Pont, S., Desrues, J., & Bésuelle., P. (2017). Variability of the microstructure in a double scale model for hydro-mechanical coupling in clay rocks. 7th International Conference on Clays in Natural and Engineered Barriers for Radioactive Waste Confinement, Davos, Switzerland.

[91] Collin, F., Kotronis, P., & Pardoen, B. (2016). Numerical modelling of Multiphysics couplings and strain localization. Doctoral course presented at the 27th ALERT Doctoral School 2016, Alert Geomaterials, The Alliance of Laboratories in Europe for Education, Research and Technology, Aussois, France.

[92] Collin, F., Talandier, J., & Pardoen, B. (2016). Modelling an in-situ ventilation test in the Andra Underground Research Facilities. Paper presented at the 3rd European Conference on Unsaturated Soils, E-UNSAT 2016, Paris, France.

[93] Charlier, R., Dieudonné, A-C., Pardoen, B., & Collin, F. (2016). Numerical modelling of hydromechanical coupling: permeability dependence on strain path. Mont Terri technical meeting - FE meeting. SwissTopo & Nagra, St Ursanne, Switzerland.

[94] Charlier, R., Collin, F., Pardoen, B., & Salehnia, F. (2015). Numerical modelling of shear banding around openings in clayey rocks. Application to URL dedicated to nuclear waste disposals. SEG conference, Barcelona, Spain.

[95] Pardoen, B., Levasseur, S., Collin, F., & Seyedi, D. M. (2015). Modelling the excavation damaged zone in Callovo-Oxfordian claystone using shear strain localisation. Paper presented at the international conference Clays In Natural And Engineered Barriers For Radioactive Waste Confinement. Brussels, Belgium.

[96] Pardoen, B., Collin, F., & Talandier, J. (2015). Modelling of large-scale in situ ventilation test in clayey rock. Poster session presented at the international conference Clays In Natural And Engineered Barriers For Radioactive Waste Confinement. Brussels, Belgium.

[97] Seyedi, D., Armand, G., Besuelle, P., Collin, F., Cuvilliez, S., Desrues, J., Duveau, G., van den Eijnden, A.P., Fernandes, R., Gens, A., Giot, R., Hoxa, D., Kazmierczak, J.-B., Pardoen, B., Robinet, J.C., Shao, J.-F., Souley, M., Tran, T.H., Vaunat, J. (2015). A model benchmark exercise for numerical analysis of the Callovo-Oxfordian claystone hydromechanical response to excavation operations. Paper presented at the international conference Clays In Natural And Engineered Barriers For Radioactive Waste Confinement. Brussels, Belgium, pp.439-440.

[98] Collin, F., & Pardoen, B. (2015). Prediction of the excavation damaged zone in Callovo-Oxfordian claystone using a coupled second gradient model. Australian Geomechanics Society, AGS conference, University of Newcastle, Australia.

[99] Pardoen, B., Levasseur, S., & Collin, F. (2014). Using shear strain localisation to model the fracturing around gallery in unsaturated Callovo-Oxfordian claystone. Paper presented at the 10th International Workshop on Bifurcation and Degradation in Geomaterials, Hong Kong, China.

[100] Pardoen, B., Levasseur, S., & Collin, F. (2014). Excavation damaged zone modelling including hydraulic permeability evolution in unsaturated argillaceous rock. Paper presented at the 6th International Conference on Unsaturated Soils, UNSAT 2014, Sydney, Australia.

[101] Pardoen, B., Levasseur, S., & Collin, F. (2013). Damage zone modelling due to underground drilling in unsaturated argillaceous rock with shear strain localisation. Poster session presented at the 24th ALERT Workshop, Aussois, France.

[102] Pardoen, B., Levasseur, S., Collin, F., & Radu, J.-P. (2013). Excavation damaged zone modelling with shear strain localisation in claystone. Paper presented at LAGASHOP 2013, First International Workshop on the Finite Element code LAGAMINE, Liège, Belgium.

[103] Pardoen, B., Levasseur, S., & Collin, F. (2013). Modelling the excavation damaged zone in claystone with strain localisation using coupled second gradient model and the influence of gallery ventilation. Paper presented at UNSAT WASTE, International Symposium on Unsaturated Soil Mechanics and Deep Geological Nuclear Waste Disposal, Shanghai, China.

[104] Pardoen, B., Collin, F., Levasseur, S., & Charlier, R. (2012). Modelling the excavation damaged zone in Callovo-Oxfordian claystone with strain localization. Paper presented at the 23rd ALERT Geomaterials Workshop, Aussois, France.

[105] Pardoen, B., Talandier, J., Charlier, R., Collin, F., Radu, J.-P., & Gerard, P. (2012). Numerical modelling of an in situ ventilation test in Callovo-Oxfordian claystone. Poster session presented at the 5th International Meeting on Clays in Natural & Engineered Barriers for Radioactive Waste Confinement, Montpellier, France.

[106] Pardoen, B., Talandier, J., Charlier, R., Collin, F., & Radu, J.-P. (2012). Hydro and Hydro-Mechanical Modelling of Ventilation Test in Clayey Rocks. Paper presented at the 2d European Conference on Unsaturated Soils, E-UNSAT 2012, Napoli, Italy.

[107] Pardoen, B., Talandier, J., Charlier, R., Collin, F., & Radu, J.-P. (2012). Modélisation numérique d'un essai de ventilation in situ. Paper presented at Transfert 2012, Propriétés de transfert des géomatériaux, Lille, France.

[108] Pardoen, B., Charlier, R., Collin, F., Radu, J.-P., & Talandier, J. (2011). Hydro and hydro-mechanical modelling of ventilation test in clayey rocks. Poster session presented at the 22nd ALERT Geomaterials Workshop, Aussois, France.

TEACHING

Associate scientist: *(University of Lyon, French National School of State Public Works ENTPE, France)*

2021-present Applied soil mechanics
Course: 1st Master (2d year of engineering cycle), 24h/year of theoretical lectures and exercises.
Subjects: Elastoplaticity, limit state analysis, sustaining gravity wall, deep foundations.

2020-present Continuum mechanics
Course: 3rd Bachelor (1st year of engineering cycle), 62h/year of theoretical lectures and exercises.
Subjects: Continuum mechanics, stress and strain, constitutive laws.

2019-present Soil mechanics
Course: 3rd Bachelor (1st year of engineering cycle), 25h/year of theoretical lectures and exercises.
Subjects: soil classification, water in soils, stress and strain, foundations.

2019-present Experimental approach in civil engineering
Course: 1st Master (2d year of engineering cycle), 32h/year of practical session.
Subjects: Shear strength, volumetric behaviour, constitutive laws, direct shear test, permeability test.

Associate Professor: *(UCL, Louvain School of Engineering, Civil engineering, Belgium)*

2018-2019 Geotechnics
Course: 1st Master, 5 ects., 30h/year of theoretical lectures, oral evaluation, LGCIV2071.
Subjects: Geotechnics, geotechnical structures, soil-structure interactions, rock mechanics, constitutive modelling of soils and rocks, organisation of practical sessions.

Building and foundation project
Course: 1st Master, 7 ects., 16h/year of practical sessions, oral group evaluation, LGCIV2011.
Subjects: Soil classification, building foundations, pile and shallow foundation design.

Geomaterials
Course: 2d Bachelor, 5 ects., 5h/year of theoretical lectures, written evaluation, LGCIV1031.
Subjects: Nature of soil and rocks, water effect.

2017-2019 Soil mechanics
Course: 3rd Bachelor, 5 ects., 30h/year of theoretical lectures, written evaluation, LGCIV1072.
Subjects: Soil mechanics and geotechnical structures.

Private teaching in higher education:

2014-2015 Organism: SA Cogito, Brussels, Belgium.
Students: all years of Bachelor's degree in civil and industrial engineering, ULg and HELMo Gramme.
Subjects: mathematics, physics, chemistry, mechanics, mechanics of materials, scientific drawing, geotechnics, geophysical prospecting, statistics, economy, etc.

Doctoral assistant: *(ULg, Applied sciences, Civil engineering, Belgium)*

2011-2015 Exercise / teaching sessions, written evaluation.
Course: "Soil mechanics and geotechnics", GERE0019-1, 30h/year, Pr. R. Charlier and F. Collin.
Students: 1st Master, bioengineering, Gembloux Agro-Bio Tech faculty.
Subjects: porous granular material, mechanical properties, water effects in soils, consolidation, stress state, shallow and deep foundations, settlements, slope stability, retaining wall.

2012-2014 Exercise sessions, written evaluation.
Courses: "Experimental geotechnics", GCIV0623-2, "Soil and rock mechanics", GCIV2036-2, "Building integrated project", GCIV0608-1, Pr. R. Charlier and F. Collin.
Students: 3rd Bachelor, 1st Master, civil engineering.
Subjects: pile foundation design, rock mechanics and rock joints behaviour, soil investigation, building foundation, etc.

ADMINISTRATION AND COLLECTIVE RESPONSIBILITIES

University of Lyon, ENTPE:

2019-present
- President of various student juries for master thesis and engineer internship.
- Pedagogical follow-up of student and jury president of a professional master thesis. Specialised Master in Tunnels and Underground Structures (INSA Lyon-ENTPE, grand Paris Express)
- Member of PhD thesis juries and steering committees.
- Member of the « Youth researchers » commission of CFMR.

Université catholique de Louvain :

2019-2020
- Member of the scientific and technical council (june 2019 - june 2020) of the Société Belge de Géologie de l'Ingénieur et de Mécanique des Roches (SBGIMR).

2018-2019
- Manager of the civil and environmental engineering (GCE) department (August-December 2018).
- Member of the Management Committee of experimental platform LEMSC, Laboratoire Essais mécaniques, Structures et génie civil (January 2018 – July 2019).
- Delegate of the GCE department at the steering committee of the Institute of Mechanics, Materials, and Civil Engineering, iMMC (August 2018 – July 2019).
- Delegate of the GCE department at the degree accordance council of the Louvain School of Engineering (EPL) for Bachelor and Master degrees (January 2018 – July 2019).
- Member of the selection committee of PhD-assistant in iMMC.

Member of juries:

PhD thesis
- 2021: "Bearing capacity of shallow and deep foundations on rock mass: Analytical and Experimental investigations." by H. Gharsallaoui, supervised by Pr. A. Holeyman, UCL.
- 2018: "Pile driving models within the framework of a non-dimensional analysis" by K. H. Victor, supervised by Pr. A. Holeyman, UCL.

Master thesis: on offshore windmills foundation, calcarenite, excavation, CPT test, modelling of dam scouring, wood structures, sediment transport, pile testing, rock nets, dam modelling, mesh free method, tunnelling, etc.

Professional thesis: Pedagogical follow-up and jury president of 2 specialised Masters in Tunnels and Underground Structures (INSA de Lyon - ENTPE). Project on the station Porte Maillot of the grand Paris Express.

Internships: students of Univ. of Lyon (ENTPE) doing internship in industry (CETU, BLB constructions, Ifsttar, etc.).

Member of PhD steering committees:

2020-present "Multi-scale modelling of the thermo-hydromechanical behaviour of argillaceous rocks" by N. Zalamea, supervised by P. Bésuelle, Université Grenoble Alpes.

2020-present 2 PhDs on "Constitutive modelling of freezing-thawing cycles of soils applied to foundation soils and compacted earth." by Li Xin and Y. Liu, supervised by Pr. K.K. Wong and A. Fabbri, ENTPE, University of Lyon.

2018-2021 "Numerical and experimental investigation of monopile driving resistance in carbonate rocks" by M. Jafari, supervised by Pr. A. Holeyman, UCL.

2017-2021 "Bearing capacity of shallow and deep foundations on rock mass: Analytical and Experimental investigations." by H. Gharsallaoui, supervised by Pr. A. Holeyman, UCL.

Université de Liège :

2015 Press scientific article. Production of a popularising scientific article about the research on nuclear wastes storage realised in the ArGEnCo department at ULg.

2014 Various juries of student projects at ULg and UCL.

OTHERS

Conference organisations and expertises:

2025	Member of the **technical committee of an international conference**. "3rd International Conference on Geomechanics and Geoenvironmental Engineering (iCGMGE)", (iCGMGE-2025, 26-28 November 2025, Western Sydney University, Penrith Campus, Sydney, Australia).
2024-present	Member of a **work group** (GT CFMR Couplages (T)HM) of the Comité Français de Mécanique des Roches (CFMR) on the production of **recommendations concerning the (thermo-)hydromechanical coupling in rocks**.
2023	Scientific expertise for ANRT (national French association of technological research) of a CIFRE project (collaborative and PhD funding, n°0424).
2023	Scientific evaluation of research Master project in Western Sydney University, Australia. *"Irregular soil-structure interactions of integral abutment bridges in New South Wales (NSW, Australia)"*, by M. Lu. Supervision Panel: Professor Chin Leo, Professor Samanthika Liyanapathirana, Doctor Pan Hu. Evaluation Panel: Associate Professor Benoît Pardoen.
2022-2023	Member of a **work group** (GT30.2) of the Association Française des Tunnels et de l'Espace Souterrain (AFTES) on the production of **recommendations concerning the use of numerical methods in the design and justification of tunnels**, in soft soils and rocks.
2022	Member of the **technical committee of an international conference**. "2nd International Conference on Geomechanics and Geo-environmental Engineering, 6th GCSTMR World Congress", (iCGMGE, 27-30 November 2022, Western Sydney University, Sydney, Australia).
2013	Contribution to the **organisation of an international workshop**. "LAGASHOP 2013, First International Workshop on the Finite Element Code LAGAMINE" (9-12 September 2013, ULg, Belgium).

Memberships:

AFTES	Association Française des Tunnels et de l'Espace Souterrain, France.
AUGC	Association Universitaire de Génie Civil, France.
SBGIMR	Société Belge de Géologie de l'Ingénieur et de Mécanique des Roches. Member of the scientific and technical council (june 2019 - june 2020).
CFMR	Comité Français de Mécanique des Roches.
CFMR Jeunes	Member of the « Youth researchers » commission of CFMR.
CFMS	Comité Français de Mécanique des Sols et de Géotechnique.
ISRM	International Society for Rock Mechanics.

Various:

2015-present	Reviews of scientific articles in international journals (Eng. Geol., Comp. Geotech., RMRE, …).
2011-present	Follow-up meetings of master, doctoral and postdoctoral research projects.
2011-present	Examination, teaching and pedagogical meetings.
2011-present	Various actions and activities with industrial / scientific partners (Andra, HydroQuébec, Arcadis).

Languages:

French: native language.
English: very good knowledge (reading, writing and speaking) / bilingual after a 1 year stay in America.
Dutch: basic knowledge.

Geotechnical softwares and computing languages:

Use and developments:	Lagamine finite element code (ULg, 3SR), FLAC.
Programming:	Matlab, Fortran, Fish (FLAC), Linux.
Use:	Comsol, Plaxis, Geo-studio, Abaqus, etc.