Tulio HONORIO DE FARIA

Associate Professor
Laboratoire de Mécanique et Technologie
Department of Civil Engineering and Environment
École Normale Supérieure Paris-Saclay, France

PERSONAL INFORMATION

Researcher unique identifier(s): **ORCID**: 0000-0003-0281-4502 **Research ID**: S-5867-2017
Google scholar: https://scholar.google.fr/citations?user=8kHPd58AAAAJ

Date of birth: **June 20th 1988**
Nationality: Brazilian and French

EDUCATION

10/2012-10/2015: PhD, Civil Engineering and Mechanics (laude with honors)
École Normale Supérieure de Cachan, France
PhD supervisor: Benoît Bary; Co-supervisor: Farid Benboudjema

10/2011-09/2012: M.Sc., Materials Science for Sustainable Construction
École des Ponts Paristech, France

02/2006-12/2010: BA, Civil Engineering, Federal University of Goiás, Brazil

CURRENT POSITION

From 09/2018: Associate Professor, Department of Civil and Environmental Engineering,
École Normale Supérieure Paris-Saclay (ENSPS), France

PREVIOUS POSITIONS

10/2017-08/2018: Postdoc/Teaching Assistant, MSME Lab., **Université Paris-Est Créteil** (UPEC)
Project: Physical properties of hydroxyapatite from molecular simulations

10/2015-09/2017: Postdoctoral Researcher, **Navier Laboratory**, Ecole des Ponts Paristech (ENPC)
Project: Thermal expansion of adsorbing microporous media and application to clay desiccation

10/2012-10/2015: Research engineer (Doctoral contract), Concrete and Clay Lab., **CEA Saclay**:
Project: Modelling and numerical simulation of the mechanical behaviour and cracking of concrete at early age
Project funded by ONDRAF/NIRAS (Belgium)

03/2012-09/2012: Engineer Intern, **Lafarge Research Centre**,
Project: Coupled modelling of hydration and transport in cement based materials.

02/2010-07/2010: Engineer Intern, **Eiffage Construction**,
Project: Building pathologies on post-sale service: identification and prevention.

AWARDS AND HONORS

2011 Lafarge scholarship for master at *École des Ponts Paristech*, France
2011 International student scholarship at *École Normale Supérieure de Cachan* with scholarship – *declined*.
2011 Scholarship « Erasmus Advanced master on structural analysis of historical constructions » with scholarship – *declined*.
2009 BRAFITEC exchange scholarship Brazil-France

RESEARCH FUNDING

Status: PI = Principal (Lead) Investigator; CI= Co-Investigator

	Funding	Value	Title	Status
2019/ 2023	ANR	284 k€	THEDESCO: Thermal Deformations of Concrete: predictive modeling for tailored design and adaptation https://anr.fr/Projet-ANR-19-CE22-0004 (CI: F. Benboudjema, C. Giry)	PI
2020	DIM RESPORE (Paris region)	60 k€	Capillary Flow Porometer for Multidisciplinary Applications (Co-PI: E. Vennat ; CI: F. Benboudjema, A. Bourdot, J.M. Fleureau)	Co-PI

2022/ 2025	CNRS 80 Prime	115 k€	ESOPE: Damage by salts: origins of the crystallization pressure (PI: L. Brochard (ENPC) ; Others CI: L. Mercury (ISTO); F. Osselin (ISTO); M. Vandamme (ENPC); J-M. Pereira (ENPC))	CI
2021/ 2024	IDEX LaSIPS	115 k€	HYDRA: Development of a Broad-band Dielectric Approach for the Non-destructive Evaluation of Hydration of Cement-Based Materials (PI: E. Vourc'h ; Others CI: F. Benboudjema, F. Daout)	CI

SUPERVISION

PhD thesis (industrial partners; ***national grants***)

7. (2022-) "*Bottom-up modelling of the mechanical properties of cement-based materials from molecular simulations*". Co-supervision: S. Poyet, B. Bary, A. Chartier, T. Chanpentier (CEA)
6. (2022-) "*Study of crystallization pressure by molecular simulation and microfluidics experiments*". Co-supervision L. Brochard (ENPC) ; Others CI: L. Mercury (ISTO); F. Osselin (ISTO); M. Vandamme (ENPC); J-M. Pereira (ENPC)), ***CNRS 80 Prime***
5. **Sofiane Ait-Hamadouche** (2021-) "*Development of a Broad-band Dielectric Approach for the Non-destructive Evaluation of Hydration of Cement-Based Materials*", Co-supervision E. Vourc'h, F. Daout, F. Benboudjema (ENSPS), ***IDEX LaSIPS***
4. **Fatima Masara** (2021-) "*Multiscale modelling of the thermo-hygro-mechanical response of concrete informed by the molecular scale*", Co-supervision F. Benboudjema (ENSPS), ***ANR THEDESCO***
3. **Takwa Sayari** (2019-) "*Kinetics of drying in concrete: application to achieving water content equilibrium in fire behavior tests.*", Co-supervision F. Benboudjema (ENSPS); F. Robert and S. Mohaine (CERIB)
2. **Mihaja Razafimbelo** (2019-) "*Optimization of the reinforcement in massive zones in reinforced concrete under complex loadings".* Co-supervision F. Gatuingt (ENSPS); M. Bottoni and G. Herve-Secourgeon (EDF R&D)
1. **Pascale Saba** (2018-) "*Mechanics of cement-based composites reinforced by glass fibres grid*", Co-supervision F. Benboudjema (ENSPS); X. Brajer (Saint Gobain Research)

Master project

10. **Bilal Mahmoud Hawchar** (Mar-2022 to Jun-2022) "*Origins f crystallization pressure par molecular simulation*" (Co-supervision Laurent Brochard (ENPC))
9. **Loric Renault** (Apr-2021 to Jun-2021) "*Optimizing the packing density of aggregates in concrete using simulations and machine learning*"
8. **Dikra Afkir** (Mar-2021 to Jul-2021) "*Topology optimization of the reinforcement in cement-based materials*" (Co-supervision Fabrice Gatuingt)
7. **Mohamad Khoder** (Mar-2021 to Jun-2021) "*Experimental characterization and micromechanical modelling of the properties of concrete made with seashell aggregates*" (Co-supervision Alexandra Bourdot)
6. **Sofiane Ait Hamadouche** (Mar-2021 to Jun-2021) "*Nanomechanics of C-S-H and ASR gels: a study by coarse-grained simulations*"
5. **Fatima Masara** (Apr-2020 to Jul-2020) "*Thermal pressurization and effective interactions in C-S-H under sorption*" (Co-supervision Farid Benboudjema)
4. **Estefanía Nuñez Del Prado** (Mar-2020 to Jun-2020) "*Molecular modelling of the hysteresis under sorption and RH-dependent elastic constants of C-S-H*" (Co-supervision Farid Benboudjema)
3. **Nejd Hammami** (Mar-2020 to Jun-2020) "*Influence of aggregate seashell aggregate shape on concrete properties: experimental characterization and micromechanics modelling*" (Co-supervision Alexandra Bourdot, Dalal Badreddine)
2. **Percy Guerra** (Mar-2019 to Jun-2019) "*Dimensional stability of ettringite: molecular dynamics study of the RH- and temperature dependencies*" (Co-supervision Alexandra Bourdot)
1. **Reine Fares** (Mar-2015 to Aug-2015) "*Numerical estimation of the multiscale thermo-viscoelastic properties of concrete at early-age*" (Co-supervision Benoît Bary)

Undergraduate Research Projects

12. **Marc Vacher** (2020) *"Cement-based composites with seashells fillers" (*Co-supervision Alexandra Bourdot and Maroua Maroufi)
11. **Sofiane Ait-Hamadouche** (2020) *"Tailoring the composition of cement paste for a target elastic response: using machine learning for the exploration of mix design space"*
10. **Wassi Hussain** (2020) **"***Characterization of the hydration and modelling of phases present in pastes with seashell" (*Co-supervision Alexandra Bourdot)
9. **Ornella M. Chemgne Tamouya** (2019) "*Molecular modelling of Alkali-Silica Reaction (ASR) products"*
8. **Estefanía Nuñez Del Prado** (2019) "*Molecular modelling of the elastic constants of C-S-H*" (Co-supervision Farid Benboudjema)
7. **Sirine Al-Dandachli** (2019) "*Energy storage in ettringite: a study based on molecular simulations*" (Co-supervision Alexandra Bourdot)
6. **Thibault Ronzaud** (2019) "*Valorisation of shell as concrete aggregates: experimental and micromechanics study* "
5. **Rodrigo Yanez** (2019) "*Effects of drying in concrete structures layouts obtained from topology optimization*" (Co-supervision Farid Benboudjema)
4. **Percy Guerra** (2018) "*Identification of ettringite behaviour: physical properties estimated by* in silico *experiments*"
3. **Samy Ben-Hamoudi** (2018) "*Hydrodynamics in C-S-H nanopores: a molecular dynamics study*"
2. **Martin Pegeot** (2018) "*Topology optimization of reinforcement in rendering mortars*", (Co-supervision Farid Benboudjema)
1. **Quentin Laurent** (2018) "*Simulation of the evolution of capillary porosity of cement pastes at early age*"

Visiting researchers

1. **Waleska Barbosa, *post-doc level*** (Apr-2020 to Dec-2020) "*Molecular modelling of substitutions in and symmetry transitions in tricalcium silicates"*. Visiting Research From Federal University of Paraná (Brazil)
2. **Saied Babaei**, ***doctoral level*** (Apr-2020 to Jun-2020) "*Micromechanics of drying and thermal shrinkage in cement-based materials"*. Visiting Research From SCK-, University of Antwerp (Belgium). (Co-supervision F. Benboudjema).

TEACHING ACTIVITIES

From 2018	ENSPS	Multiscale modelling (M.Sc. level); Complex media; Numerical methods; Soil Mechanics; Energy distribution; Discontinuous media; Transport in porous media
2017-2018	UPEC	Fluid and Solid mechanics; Thermal science; Numerical analysis and Calculus, Numerical simulation of structures; Dynamics and vibrations; General Mechanics
2016-2017	ENPC	Molecular simulations in materials science
2013-2015	ESTP/ESITC	Construction materials

MEMBERSHIP OF SCIENTIFIC AND TECHNICAL COMMITTEES

From Mai-2022	Member, RILEM Technical Committee **DCS – Data-driven concrete science**
From Aug-2019	Member, RILEM Technical Committee **CCS - Early age and long-term crack width analysis in RC Structures**
From Feb-2019	Team Leader, LMT, **DIM RESPORE** (Network of Excellence in Porous Solids – Area of Major Interest of *Île-de-France* region)
Jan-2015 to Mar-2019	Member, RILEM Technical Committee **CMS - Thermal cracking of massive concrete structure**
Oct-2017 to Oct-2018	Executive board, International Association ConCreep (**IA-CONCREEP)**
Jan-2016 to Nov-2018	Member, **COST Action TU 1404** *Towards the next generation of standards for service-life of cement-based materials and structures*
Oct-2014 to Oct-2017	Member, **NANOCEM**: Partner Project on *Multiscale estimation of the thermo-viscoelastic properties of cementitious materials at early age*

REVIEWING ACTIVITIES

***Grant review* (1)**

ANR, French National Research Agency (1)

***International journals* (81 reviews) https://publons.com/researcher/1205056/tulio-honorio/**

1. ACS Earth and Space Chemistry (1);
2. Advanced Theory and Simulations (2);
3. AIChE Journal (1);
4. American Mineralogist (1);
5. Applied Clay Science (5);
6. Applied Sciences (8);
7. Buildings (2);
8. Cement and Concrete Composites (2);
9. Cement and Concrete Research (12);
10. Composite Structures (1);
11. Construction and Building Materials (13);
12. Fractal and Fractional (2);
13. International Journal for Numerical and Analytical Methods in Geomechanics (1);
14. Journal of Advanced Concrete Technology (5);
15. Journal of African Earth Sciences (1);
16. Journal of Engineering Mechanics ASCE (1);
17. Journal of Materials in Civil Engineering (3);
18. Journal of Physical Chemistry (1);
19. Journal of Theoretical, Computational and Applied Mechanics (1)
20. Materials (5);
21. Materials & Design (2)
22. Materials Research (1, *not in Publons*);
23. Materials and Structures (3);
24. Mechanics of Time-Dependent Materials (1);
25. Minerals (2);
26. SN Applied Sciences (1);
27. Structural Engineering and Mechanics (2);
28. Sustainability (1).

INVITED TALKS (7) AND ADVANCED SCHOOLS (3)

Mar-2022 *Multiphysics behaviour of porous materials from the molecular scale*. **Invited talk** at the Seminar of Quartz Lab of SupMéca, Saint-Ouen, France.

Mar-2022 *The molecular scale in cement-based materials investigations: contribution to understanding, prediction, and design for durability*. **Invited talk** at the Workshop of the R&D FURNAS-ANEEL (UFG) "Service Life", Federal University of Goiás, Goiânia, Brazil.

Mar-2022 *Multiscale, Multiphysics, Multitechnique modelling applied to cement-based materials*. **Advanced school** at for the Doctoral program of Civil engineering at the Federal University of Goiás, Goiânia, Brazil.

Aug-2020 *The perspective of multi-scale modelling in the research on cement-based materials: contribution for the development of predictive models and non-destructive evaluation*. **Invited talk** at the Workshop of the R&D FURNAS-ANEEL 0394-1504/2015 (UFG part) – Main results, discussion and perspectives in the field of durability of concrete. Online meeting organized by the Federal University of Goiás, Goiânia, Brazil.

Mar-2020 *Molecular simulations of nanoporous materials: unveiling the physical origins of the thermo-hygro-mechanical response* – **Advanced school of ETN ATHOR** (European Training network – Innovative Training Network *Advanced THermomechanical multiscale mOdelling of Refractory linings*). A recorded video party was made available in Moodle ELEANOR (operated by RWTH Aachen as part of the ATHOR project) for use by all students associated with universities related to the ATHOR project, and, the wider refractories community via the moodle, for example, but not restricted to, the Federation for International Refractory Research and Education (FIRE).

Fev-2020 *How molecular simulations may explain multiphysics phenomena in concrete and clays?,* **Invited talk** at the The University of Queensland, Brisbane, Australia (Funded by BOOSTER project of ENSPS)

Nov-2019 *Numerical Nano-Twins and Materiomics : elucidating the origins of porous materials behaviour from material « genome »,* **Invited talk** at the Seminar "Club of affiliates of the LMT", Cachan, France

May-2019 *Multiscale methods* – **Advanced school of CSMA Juniors** (French Association *Calcul des Structures et Modélisation*), Ile de Porquerolles, France

May-2019 *Water in cement-based materials*, **Invited talk** at the weekly seminar at the Thomas Young Centre, London, United Kingdom

May-2015 *Multiscale Modelling of the thermo-viscoelastic properties of cement-based materials and structures at early-age***, Invited talk** at the International Workshop of Young Doctors in Gemechanics (W(H)YDOC), Champs-sur-Marne, France

CONFERENCE AND MINISIMPOSIUM ORGANISATION AND ACTIVITIES

2020 Organization of mini-symposium **MS436 Multiscale mechanics and physics of civil engineering porous materials** on at the 14th World Congress in Computational Mechanics and ECCOMAS Congress. Co-organization with L. Brochard (ENPC), J. Sanahuja (EDF R&D) and K. Ioannidou (CNRS).

2020/21 *Member of scientific Committee* of the **International RILEM conference on early-age and long-term cracking in RC structures.** https://crc2021.org

2023 *Member of scientific Committee* of the **Synercrete 23 - The International RILEM Conference on Synergising expertise towards sustainability and robustness of cement-based materials and concrete structures,** Milos Island, Greece **https://synercrete.com/**

PUBLICATIONS

Ph.D. THESIS: Honorio de Faria, T. (2015) *Modelling concrete behaviour at early-age: multiscale analysis and simulation of a massive disposal structure***.** École Normale Supérieure de Cachan. <https://tel.archives-ouvertes.fr/tel-01241585> (manuscript in English)

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS (corresponding author)

- Post-Doc#; PhD candidate*; Master Student**; Undergraduate student***

2022

J37. Honorio, T.; Brochard, L. (2022) *Drained and undrained heat capacity of swelling clays*. PHYSICAL CHEMISTRY CHEMICAL PHYSICS - **accepted**

J36. Barbosa, W#.; **Honorio, T.** (2022) *Triclinic tricalcium silicate: structure and thermoelastic properties from molecular simulations.* CEMENT AND CONCRETE RESEARCH - **accepted**

J35. Honorio, T.; Carasek, H.; Cascudo, O. (2022) *Water self-diffusion in C-S-H: effect of confinement and temperature studied by molecular dynamics*. CEMENT AND CONCRETE RESEARCH 155, 106775. doi: 10.1016/j.cemconres.2022.106775

2021

J34. Hervé-Sercougeon, G.; Hervé-Sercougeon, E.; Habib, S.; Razafimbelo, M.*; Bottoni, M.; Escoffier, F.; Mendoza-Chavez, G.; Kameh, A.; Voldoire, F.; Gatuingt, F.; Oliver-Leblond, C.; **Honorio, T.**; Escoffier, F.; Nazé, P-A.; Chatzigogos, C. (2021) *On structural Finite Element modelling strategies and their influence on the optimization of final constructability of RC structures*. NUCLEAR ENGINEERING AND DESIGN 385, 111541. doi: doi.org/10.1016/j.nucengdes.2021.111541

J33. **Honorio, T.;** Masara, F.*; Benboudjema, F. (2021) *Heat capacity, compressibility and thermal expansion of liquid water confined in C-S-H.* CEMENT 6, 100015. doi: 10.1016/j.cement.2021.100015

J32. **Honorio, T.;** Maaroufi, M.; Al Dandachli, S.**; Bourdot, A. (2021) *Ettringite hysteresis under sorption from molecular simulations*. CEMENT AND CONCRETE RESEARCH 150, 106587. doi: 10.1016/j.cemconres.2021.106587

J31. Bore, T.; Mishra, P. N.; Wagner, N.; Schwing, M.; **Honorio, T.**; Revil, A.; Scheuermann, A. (2021) *Coupled Hydraulic, Mechanical and Dielectric investigations of fine grained soils during shrinkage*. ENGINEERING GEOLOGY 294, 106352. doi: 10.1016/j.enggeo.2021.106352

J30. Abdolhosseini Qomi, M. J.; Brochard. L.; **Honorio, T.**; Maruyama, I.; Vandamme, M. (2021) *Advances in atomistic modelling and understanding of drying shrinkage in cementitious materials*. CEMENT AND CONCRETE RESEARCH 148, 106536. doi: 10.1016/j.cemconres.2021.106536

Invited review to the special issue on "*Molecular scale modelling of cement and related systems*". (authors in alphabetical order; the authors contributed equally to the manuscript)

J29. Azenha, M.; Kanavaris, F.; Schlicke, D.; Jędrzejewska, A.; Benboudjema, F.; **Honorio, T.**; Šmilauer, V.; Serra, C.; Forth; J.; Riding, K.; Khada, B.; Sousa, C.; Briffaut, M.; Lacarrière, L.; Koendeers, E.; Kanstad, T.; Klausen, A.; Torrenti J.M.; Fairbairn, E.M.R. (2021) *Recommendations of RILEM TC 287-CCS: Thermo-chemo-mechanical modelling of massive concrete structures towards cracking risk assessment*. MATERIALS AND STRUCTURES 54 (135). doi: 10.1617/s11527-021-01732-8

J28. Königsberger, M.; **Honorio, T;** Sanahuja, J.; Delsaute, B.; Pichler, B. L. (2021) A. *Homogenization of nonaging basic creep of cementitious materials: a multiscale modeling benchmark.* CONSTRUCTION AND BUILDING MATERIALS 290, 123144. doi: 10.1016/j.conbuildmat.2021.123144

J27. Brochard, L.; **Honorio, T.** (2021) *Thermo-poro-mechanics under adsorption applied to the anomalous thermal pressurization of water in undrained clays*. ACTA GEOTECHNICA. doi: 10.1007/s11440-021-01188-8

J26. **Honorio, T.** (2021) *Shear deformations in nanolayered silicates: the role of specific ion effects in the alkali-silica reaction products*. MATERIALS AND STRUCTURES 54:86. doi: 10.1617/s11527-021-01671-4

J25. Kanavaris, F.; Jędrzejewska, A.; Sfikas, I.; Schlicke, D.; Kuperman, S.; Šmilauer,V.; **Honorio, T.**; Fairbairn, E.M.R.; Valentim, G.; Funchal de Faria, E.; Azenha, M. (2021) *Enhanced massivity index based on evidence from case studies: towards a robust pre-design assessment of early age thermal cracking risk and practical recommendations*. CONSTRUCTION AND BUILDING MATERIALS 271, 121570. doi: 10.1016/j.conbuildmat.2020.121570

2020

J24. **Honorio, T.**; Chemgne Tamouya, O. M.***; Shi, Z. (2020) *Specific ion effects control the thermoelastic behavior of nanolayered materials: the case of crystalline alkali-silica reaction products*. PHYSICAL CHEMISTRY CHEMICAL PHYSICS 22, 27800. doi: 10.1039/d0cp04955g

J23. **Honorio, T.**; Chemgne Tamouya, O. M.***; Shi, Z.; Bourdot, A. (2020) *Intermolecular interactions of nanocrystalline alkali-silica reaction products under sorption*. CEMENT AND CONCRETE RESEARCH 136, 106155. doi: 10.1016/j.cemconres.2020.106155

J22. **Honorio, T.**; Carasek, H.; Cascudo, O. (2020) *May self-diffusion of ions computed from molecular dynamics explain the electrical conductivity of pore solutions in cement-based materials?* MATERIALS AND STRUCTURES 53(3): 67. doi : 10.1617/s11527-020-01507-7

J21. **Honorio, T.**; Guerra, P.**; Bourdot, A. (2020) *Molecular simulation of the structure and elastic properties of ettringite and monosulfoaluminate*. CEMENT AND CONCRETE RESEARCH 135, 106126. doi: 10.1016/j.cemconres.2020.106126

J20. Brochard, L.; **Honorio, T.** (2020) *Revisiting thermo-poro-mechanics under adsorption: Formulation without assuming Gibbs-Duhem equation*. INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE 152, 103296. doi: 10.1016/j.ijengsci.2020.103296

J19. **Honorio, T.**; Carasek, H.; Cascudo, O. (2020) *Electrical properties of cement-based materials: Multiscale modeling and quantification of the variability*. CONSTRUCTION AND BUILDING MATERIALS 245, 118461. doi: 10.1016/j.conbuildmat.2020.118461

J18. **Honorio, T.**; Bore, T.; Benboudjema, F.; Vourc'h, E.; Ferhat, M* (2020) *Dielectric properties of the pore solution in cement-based materials*. JOURNAL OF MOLECULAR LIQUIDS 302, 112548 doi: 10.1016/j.molliq.2020.112548

2019

J17. **Honorio, T.**; Benboudjema, F.; Bore, T.; Ferhat, M.*; Vourc'h, E. (2019) *The pore solution of cement-based materials: structure and dynamics of water and ions from molecular simulations*. PHYSICAL CHEMISTRY CHEMICAL PHYSICS 21, pp. 11111-11121. doi: 10.1039/C9CP01577A

J16. **Honorio, T.** (2019) *Monte Carlo molecular modelling of temperature and pressure effects on the interaction between crystalline calcium silicate hydrate layers*. LANGMUIR 35(11), pp. 3907-3916, doi: 10.1021/acs.langmuir.8b04156

J15. **Honorio, T.**; Lemaire, T.; Di Tommaso, D.; Naili, S. (2019) *Molecular modelling of the heat capacity and anisotropic thermal expansion of nanoporous hydroxyapatite*. MATERIALIA 7b03198 doi: 10.1016/j.mtla.2019.100251

J14. **Honorio, T.**; Lemaire, T.; Di Tommaso, D.; Naili, S. (2019) *Anomalous water and ion dynamics in hydroxyapatite mesopores*. COMPUTATIONAL MATERIALS SCIENCE 156, pp. 26-34, doi: 10.1016/j.commatsci.2018.08.060

2018

J13. **Honorio, T.**; Brochard, L.; Vandamme, M.; Lebée, A. (2018) *Flexibility of nanolayers and stacks: implications in the nanostructuration of clays*. SOFT MATTER 14, pp. 7354-7367, doi: 10.1039/C8SM01359D

J12. **Honorio, T.**; Brochard, L.; Bary, B. (2018) *Statistical variability of mechanical fields in thermo-poro-elasticity: multiscale analytical estimations applied to cement-based materials at early-age*. CEMENT AND CONCRETE RESEARCH 110, pp. 24-41, doi: 10.1016/j.cemconres.2018.05.010

J11. **Honorio, T.**; Brochard, L.; Vandamme, M. (2018) *Effective stresses and estimations of the apparent Biot coefficient in stacked clay nanolayers*. GÉOTECHNIQUE LETTERS 8 (2), pp. 97-101, doi: 10.1680/jgele.17.00170

J10. **Honorio, T.**; Bary, B; Benboudjema, F. (2018) *Thermal properties of cement-based materials: multiscale estimations at early-age*. CEMENT AND CONCRETE COMPOSITES 87, pp. 205-219, doi: 10.1016/j.cemconcomp.2018.01.003

2017

J9. Wyrzykowski, M.; Knoppik-Wróbel, A.; Benboudjema, F.; Buffo-Lacariere, L.; Sanahuja, J.; Charpin, L.; Königsberger, M.; Hellmich, C.; Pichler, B.; Valentini, L.; **Honório, T;** Smilauer, V.; Hajkova, K.G. Ye; Gao, P.; Dunant, C.; Hilaire, A.; Azenha, M. (2017) *Numerical benchmark campaign of COST Action TU1404 – microstructural modelling*. RILEM TECHNICAL LETTERS (2), pp. 99-107, doi:10.21809/rilemtechlett.2017.44

J8. **Honorio, T.**; Brochard, L.; Vandamme, M. (2017) *Hydration phase diagram of clays from molecular simulations*. LANGMUIR 33 (44), pp. 12766-12776, doi: 10.1021/acs.langmuir.7b03198

J7. Brochard, L.; **Honorio, T.**; Vandamme, M.; Bornert, M.; Peigney, M. (2017) *Nanoscale origin of the thermomechanical behavior of clays*. ACTA GEOTECHNICA, 12 (6), pp. 1261-1279, doi: 10.1007/s11440-017-0596-3

J6. **Honorio, T.**; Bary, B; Sanahuja, J.; Benboudjema, F. (2017) *Effective properties of n-coated composite spheres assemblage in an ageing viscoelastic framework*. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES 124, pp. 1-13, doi: 10.1016/j.ijsolstr.2017.04.028

J5. **Honorio, T.** (2017) *Micromechanics of transformation fields in ageing linear viscoelastic composites: effects of phase dissolution or precipitation*. MECHANICS OF TIME-DEPENDENT MATERIALS 21 (4), pp. 597-612, doi: 10.1007/s11043-017-9344-1

2014-2016

J4. **Honorio, T.**; Bary, B; Benboudjema, F. (2016) *Multiscale estimation of ageing viscoelastic properties of cement-based materials: a combined analytical and numerical approach to estimate the behaviour at early age*. CEMENT AND CONCRETE RESEARCH 85, pp. 137-155, doi: 10.1016/j.cemconres.2016.03.010

J3. **Honorio, T.**; Bary, B; Benboudjema, F.; Poyet, S. (2016) *Modeling hydration kinetics based on boundary nucleation and space-filling growth in a fixed confined zone*. CEMENT AND CONCRETE RESEARCH 83, pp. 31-44, doi: 10.1016/j.cemconres.2016.01.012

J2. **Honorio, T.**; Bary, B; Benboudjema, F. (2016) *Factors affecting the thermo-chemo-mechanical behavior of massive concrete structures at early-age: a numerical study*. MATERIALS AND STRUCTURES 49. Issue 8, pp. 3055–3073, doi: 10.1617/s11527-015-0704-5

J1. **Honorio, T.**; Bary, B; Benboudjema, F. (2014) *Evaluation of the contribution of boundary and initial conditions in the chemo-thermal analysis of a massive concrete structure*. ENGINEERING STRUCTURES 80, pp. 173-188, doi: 10.1016/j.engstruct.2014.08.050

Under Revision

J38. **Honorio, T.** *Thermal conductivity of ettringite, heat capacity and thermal expansion of ettringite and metaettringite: effects of the relative humidity and temperature*. Submitted to CEMENT AND CONCRETE RESEARCH

J39. Mahmoud Hawchar, B.**.; **Honorio, T.** *C-A-S-H thermoelastic properties at the molecular and gel scales*. Submitted to JOURNAL OF ADVANCED CONCRETE TECHNOLOGY

J40. **Honorio, T.**; Carasek, H.; Cascudo, O. *Friedel's salt: temperature dependence of thermoelastic properties*. Submitted to CEMENT AND CONCRETE RESEARCH

Under Review

J41. **Honorio, T.**; Ait Hamadouche, S**.; Fau, A. *Machine Learning and Micromechanics as Allies to Correlate Composition-Property in Cement-Based Materials*.

In Preparation

J42. **Honorio, T.** *Permeability of C-S-H*

J43. Masara, F.*; **Honorio, T.;** Benboudjema, F. *C-S-H sorption at the molecular scale: effective interactions, stability and cavitation*

J44. Ait Hamadouche, S**.; **Honorio, T.** *Nanomechanics of silicate gels: application to alkali silica reaction products*.

J45. Ferhat, M.*; **Honorio, T.**; Bore, T.; Benboudjema, F.; Daout, F.; Vourc'h, E. *Monitoring of Mortar Hydration Combining Microwave and Calorimetry Measurements*

J46. **Honorio, T.**; Masara, F.*; Poyet, S.; Benboudjema, F. *Revisiting BET adsorption model according to the molecular mechanisms of sorption under temperature variation in C-S-H*

J47. Babaei, S.; Benboudjema, F.; **Honorio, T.**; Seetharam, S.C.; Dizier, A.; Craeye, B. *Micromechanical analysis of thermo-mechanics and hydro-mechanics of hardened cement paste*

BOOK CHAPTERS ([%] chapter leaders)

- Publications associated with RILEM TCs: B1-B5

B3. Buffo-Lacarrière, L. [%]; Knoppik-Wróbel, A.; Silva, W.; **Honorio, T.**; Smilauer, V.; Asamoto, S.; Fairbairn, E. (2019) Chapter 2: Hydration and heat development. In: **Thermal cracking of massive concrete structures**, Springer, pp. 13-46. doi: 10.1007/978-3-319-76617-1_2

B2. Wyrzykowski, M. [%]; Knoppik-Wróbel, A.; Silva, W.; Lura, P.; **Honorio, T.**; Ballim, Y.; Azenha, M. (2019) Chapter 3: Thermal properties. In: **Thermal cracking of massive concrete structures**, Springer, pp. 46-67. doi: 10.1007/978-3-319-76617-1_3

B1. Benboudjema, F. [%]; Buffo-Lacarrière, L.; Knoppik-Wróbel; Staquet, S.; **Honorio, T.**; Wyrzykowski, M.; Neiry de Mendonça Lopes, A. (2019) Chapter 4: Mechanical properties. In: **Thermal cracking of massive concrete structures**, Springer, pp. 69-114. doi: 10.1007/978-3-319-76617-1_4

In preparation

B4. Oliver-Leblond, C. [%]; **Honorio, T.** [%]; Azenha, M.; Benboudjema, F.; Lacarrière, L.; Serra, C.; Alam, S.Y.; Adia, J.L. Chapter 7: Micro/Meso modelling and simulation of Cracking. In: **Cracking in RC structures (TC-CCS)**.

B5. Benboudjema, F. [%]; Rama, S. K.; Rasol, M.; Lacarrière, L.; Azenha, M.; **Honorio, T.**. Chapter 8: FE based simulations of Cracking. In: **Cracking in RC structures (TC-CCS)**.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- Publications and presentations at RILEM conferences: C27, C28, C29, C22, C21, C18, C13, C10, C9.

C29. Sayari, T.*; **Honorio, T.**; Benboudjema, F. The multi-scale multi-technique multi-physics framework required to model the thermal properties of cement-based materials. RILEM international Conference "Numerical Modeling Strategies for Sustainable Concrete Structures" (SSCS 2022), Marseille, France, July 2022.

C28. Masara, F.*; **Honorio, T.**; Benboudjema, F. The multi-scale multi-technique multi-physics framework required to model the thermal properties of cement-based materials. RILEM international Conference "Numerical Modeling Strategies for Sustainable Concrete Structures" (SSCS 2022), Marseille, France, July 2022.

C27. **Honorio, T.**; Masara, F.*; Barbosa, W[#].; Benboudjema, F. The multi-scale multi-technique multi-physics framework required to model the thermal properties of cement-based materials. RILEM international Conference "Numerical Modeling Strategies for Sustainable Concrete Structures" (SSCS 2022), Marseille, France, July 2022.

C26. Ait Hamadouche, S**.; **Honorio, T.** The multi-scale multi-technique multi-physics framework required to model the thermal properties of cement-based materials. (EURO-C 2022), Vienna, Austria, May 2022.

C25. Bourdot, A.; Martin-Cavaillé, C.** : Vacher, M.*** ; **Honorio, T.**; Sebaibi,N. ; Bennacer, R. Microstructure and durability properties of concretes based on oyster shell co-products. RILEM International Conference; Merida, Mexico, August 2021.

C24. Saba, P.*; **Honorio, T.**; Mahmood O-A. ; Benboudjema, F. Etude du comportement mécanique d'un mortier de façade dans un système ITE. AFGC, GC'2021, 8-9 June 2021, Cachan, France.

C23. Saba, P.*; **Honorio, T.**; Mahmood O-A. ; Benboudjema, F. glass fiber reinforced mortars: Crack initiation and propagation study. 13th international symposium on ferrocement and thin fiber reinforced inorganic matrices, Lyon, France, June 21-23, 2021

C22. Saba, P.*; **Honorio, T.**; Mahmood O-A. ; Benboudjema, F. Crack initiation and propagation in fiber-glass reinforced mortars. CRC2021 : International RILEM Conference on early-age and long-term crack width analysis in RC structures, Gif sur Yvette, April 2021, France.

C21. **Honorio, T.**; Ait Hamadouche, S.**; Fau, A. CSI (Cement Science Investigation): using machine learning to guess the OPC pastes composition from the elastic response. CRC2021 : International RILEM Conference on early-age and long-term crack width analysis in RC structures, Gif sur Yvette, April 2021, France. doi: 10.1007/978-3-030-72921-9_17

C20. **Honorio, T.**; Al Dandachli, S.**; Bourdot, A. Reversible order-disorder transition in ettringite-metaettringite conversion? Conference: 14th World Congress on Computational Mechanics (WCCM) & ECCOMAS Congress (2020), Jan 2021, France.

C19. Bourdot, A.; Badreddine, D.; Lackache, Y.; Rateau, O. ; **Honorio, T.** ; Sebaidi, N. Study of mechanical properties and microstructure of mortars based on oyster shell powder RUGC 2020, May 2020, France.

C18. **Honorio, T.**; Benboudjema, F.; Bore, T.; Carasek, H.; Cascudo, O.; Ferhat, M.; Vourc'h, E. Electromagnetic properties of concrete: bottom-up modeling from the molecular scale. RILEM International Conference; Guimarães, Portugal, Mars 2020.

C17. **Honorio, T.**; Bary, B. Numerical and analytical estimation of the ageing linear viscoelastic behavior of a two-phase composite with expansive inclusions. FraMCoS-10, Bayonne, France, 2019.

C16. **Honorio, T.** *Micromecânica aplicada ao estudo de argamassas de revestimento*. (in Portuguese), SBTA, Goiânia, Brazil, 2019.

C15. **Honorio, T.** *Mécanique des matériaux nanogranulaires*. (in French),CSMA, Giens, France, 2019.

C14. Bary, B., **Honorio, T.** Numerical and analytical estimation of the ageing linear viscoelastic behavior of a two-phase composite with expansive inclusions. FraMCoS-10, Bayonne, France, 2019.

C13. **Honorio, T**.; Abahri, K. Non equilibrium molecular dynamics simulation of the hydrodynamics in crystalline calcium silicate hydrates nanopores. RILEM International Conference on Sustainable Materials, Systems and Structures; Rovinj, Croatia, Mars 2019

C12. **Honorio, T.** Interactions between crystalline calcium silicate hydrates layers: grand canonical simulations of pressure and temperature effects. SynerCrete, Funchal, Portugal, October 2018

C11. **Honorio, T.** Influence of the flexibility of calcium silicate hydrates layers on the mesotexture: coarse-grained simulations accounting for three-body interactions. SynerCrete, Funchal, Portugal, October 2018

C10. **Honorio, T.**; Brochard, L. Flexibility of C-S-H sheets and stacks from molecular simulations. 2nd International RILEM/COST Conference on Early Age Cracking and Serviceability in Cement-Based Materials and Structures, EAC-02, Brussels, Belgium, September 2017

C9. Bary, B.; Baestiens, W.; Bernachy-Barbe, F.; **Honorio, T.**; Imbert, C.; Neji, M.; Poyet, S.; Segarra, C.; Touzé, G. Experimental study and numerical estimation of the early age behavior of a massive concrete structure. 2nd International RILEM/COST Conference on Early Age Cracking and Serviceability in Cement-Based Materials and Structures, EAC-02, Brussels, Belgium, September 2017

C8. **Honorio, T.**; Brochard, L.; Vandamme, M.; Stefanou, I.; Ghabezloo, S.; Bornert, M. Stability of hydrated clay layers from molecular simulations. 6th Biot Conference on Poromechanics, Champs sur Marne, France, July 2017

C7. Brochard, L.; **Honorio, T.**; Vandamme, M.; Stefanou, I.; Ghabezloo, S.; Bornert, M. A possible nano-scale origin of the surprising thermal expansion of clays. 6th Biot Conference on Poromechanics, Champs sur Marne, France, July 2017

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C5. **Honorio, T.**, Bary, B., Sanahuja, J., Effective ageing linear viscoelastic properties of composites with phase precipitations: comparison between numerical and analytical homogenization approaches. FraMCoS-9, Berkeley, EUA, 2016.

C4. **Honorio, T.**; Bary, B.; Benboudjema, F. Multiscale estimation of the viscoelastic properties of cementitious materials at early age: a combined analytical and numerical approach. ConCreep, Wien, Austria, 2015

C3. **Honorio, T.**; Bary, B.; Benboudjema, F. Estimation of elastic properties of cement based materials at early age based on a combined numerical and analytical multiscale micromechanics approach. CONMOD, Beijing, China, 2014

C2. **Honorio, T.**; Bary, B.; Benboudjema, F. Influence of the particle size distribution on hydration kinetics: a mechanistic analytical approach. CONMOD, Beijing, China, 2014

C1. **Honorio, T.**; Bary, B.; Benboudjema, F. Analysis of the thermo-chemo-mechanical behavior of massive concrete. EURO-C, St Anton am Arlberg, Austria, 2014.