

Hasselt University
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Current position

Associate Professor Structural and Computational Mechanics of Masonry and Timber
Construction Engineering Research Group, Faculty of Engineering Technology

Education

PhD in Sciences, Hasselt University, Belgium (2013), thesis: 'Discontinuous modelling of masonry failure'
Master in Engineering Technology: Construction, XIOS University College, Belgium (2008)

Research interests

Structural analysis of timber and masonry structures, structural mechanics, computational mechanics

Career

Associate Professor at Hasselt University, since 2020
Assistant Professor at Hasselt University (2015 – 2020)
Post-doctoral researcher at Hasselt University (2013 – 2015)
Visiting researcher at Delft University of Technology (2012)
PhD researcher at Hasselt University (2009 – 2013)
Structural engineer at AB Associates Belgium (2008 – 2009)

Research projects and scientific engagements

Principal investigator of the following recent research projects:

- Technology Transfer project 'HoP_HoVer: Towards an advantage for timber construction through the development of high-performance timber structures using new structural connection solutions', funded by the Flemish Government, budget: 399 kEUR, 2023 – 2025
- Technology Transfer project 'HSBnext: Extra applications for timber frame structures by development and implementation of new insights in the mechanical behavior of timber frame walls', funded by the Flemish Government, budget: 232 kEUR, 2020 – 2022
- Technology Transfer project 'InnoMaso: Optimal design of innovative masonry solutions', funded by the Flemish Government, budget: 248 kEUR, 2018 – 2020
- Technology Transfer project 'SYNERGYTIMB: Optimal design of timber frame structures by identification and integration of synergetic structural behavior', funded by the Flemish Government, budget: 276 kEUR, 2016 – 2018

(Co-)supervisor of the following recent PhD projects:

- 'Mechanical behavior of timber frame structures under combined loading', 2022 – 2026
- 'Mechanical and functional performance of structural hybrid timber-photovoltaic glass façade systems', 2021 – 2025
- 'Design and optimization of timber lightweight concrete composite floor systems', 2018 – 2023
- 'Structural resistance and stability of masonry walls with thermal break elements', defended in 2021
- 'Effects of gamma radiation on Fe-rich inorganic polymers – from microscale analysis to model design', defended in 2020
- 'Efficient and robust path-following solution methods and a framework for performance assessment of numerical solutions', defended in 2019

Other scientific engagements:

- Member of the Belgian standardization mirror committee “Masonry structures – Design (Eurocode 6)” (BBRI-SECO/E25006)
- Member and Head of Delegation of the Belgian standardization mirror committee “Actions on wood structures – Design (Eurocode 5)” (BBRI-SECO/E25005)
- Member of the European standardization committee “Eurocode 5: Design of timber structures” (CEN/TC 250/SC 5)
- Member of the European standardization committee working group “Cluster Eurocode 5” (CEN/TC 250/SC 5/WG 3)
- Member of the European standardization committee subgroup “Diaphragms” (CEN/TC 250/SC 5/WG 3/SG 5)
- Member of the European standardization committee working group “Finite element design” (CEN/TC 250/SC 5/WG 11)
- Member of the SECO Technical Advisory Board as expert for timber and masonry structures
- Co-organizer of post-university courses related to the design of timber structures, in collaboration with the Flemish engineering network ie-net and WOOD.BE (2019, 2021, 2023)

Managing and teaching activities

- Head of the master’s program in Engineering Technology: Construction (Faculty of Engineering Technology)
- Head of the board of examination master in Engineering Technology: Construction (Faculty of Engineering Technology)
- Supervisor of 6 PhD students, co-supervisor of 7 PhD students, since 2014
- Supervisor of more than 90 master dissertations, since 2009
- In charge of 7 courses in the bachelor’s and master’s program in Engineering Technology: Construction (Faculty of Engineering Technology)

Scientific publications

Publications are listed on <https://www.uhasselt.be/en/who-is-who/bram-vandoren> (‘Publications’)

8 selected publications:

- B. Vandoren, K. De Proft, A. Simone, and L. J. Sluys. Mesoscopic modelling of masonry using weak and strong discontinuities, *Computer Methods in Applied Mechanics and Engineering* 255, 167-182, 2012.
- B. Vandoren, K. De Proft, A. Simone, and L. J. Sluys. A novel constrained LARge Time INcrement method for modelling quasi-brittle failure, *Computer Methods in Applied Mechanics and Engineering* 265, 148-162, 2013.
- G. Cai, J. Zhao, H. Degée, and B. Vandoren. Shear capacity of steel fibre reinforced concrete coupling beams using conventional reinforcements, *Engineering Structures* 128, 428-440, 2016.
- B. Vandoren and A. Simone. Modeling and simulation of quasi-brittle failure with continuous anisotropic stress-based gradient-enhanced damage models, *Computer Methods in Applied Mechanics and Engineering* 332, 644-685, 2018.
- J. Zhao, G. Cai, A. S. Larbi, Y. Zhang, H. Dun, H. Degée, and B. Vandoren. Hysteretic behaviour of steel fibre RC coupled shear walls under cyclic loads: Experimental study and modelling, *Engineering Structures* 156, 92-104, 2018.
- M. Deyazada, B. Vandoren, D. Dragan, and H. Degée. Experimental investigations on the resistance of masonry walls with AAC thermal break layer, *Construction and Building Materials* 224, 474-492, 2019.
- C. Driesen, H. Degée, and B. Vandoren. Efficient modeling of masonry failure using a multiscale domain activation approach, *Computers & Structures* 251, 106543, 2021.
- E. Appavuravther, B. Vandoren, and J. Henriques. Behaviour of screw connections in timber-concrete composites using low strength lightweight concrete, *Construction and Building Materials* 286, 122973, 2021.