
Editorial

A. Gil Andrade-Campos*

Department of Mechanical Engineering,
Centre for Mechanical Technology & Automation,
University of Aveiro,
Campus Universitário de Santiago,
3810-193 Aveiro, Portugal
E-mail: gilac@ua.pt
*Corresponding author

Nuno Lopes

Department of Civil Engineering,
University of Aveiro,
Campus Universitário de Santiago,
3810-193 Aveiro, Portugal
E-mail: nuno.lopes@ua.pt

Robertt A.F. Valente

Department of Mechanical Engineering,
Centre for Mechanical Technology & Automation,
University of Aveiro,
Campus Universitário de Santiago,
3810-193 Aveiro, Portugal
E-mail: robertt@ua.pt

Humberto Varum

Department of Civil Engineering,
University of Aveiro,
Campus Universitário de Santiago,
3810-193 Aveiro, Portugal
E-mail: hvarum@ua.pt

Biographical notes: A. Gil Andrade-Campos received his PhD in Mechanical Engineering from the University of Aveiro, Portugal in 2005. He is an Assistant Professor of Mechanical Engineering at The University of Aveiro, and Research Collaborator of CEMUC (Mechanical Engineering Centre from University of Coimbra, Portugal) and LiMATb (Laboratory of Materials Engineering of Brittany, France). His research interests include inverse methods, identification and determination of constitutive model parameters, optimisation methods and the use of optimisation methods in mechanical systems and shape optimisation in metal forming problems.

Nuno Lopes is an Assistant Professor at the Civil Engineering Department of the University of Aveiro, Portugal, where he completed his European PhD (2009) in the field of the behaviour of stainless steel structures in case of fire. He is also a Researcher of Laboratory for the Concrete Technology and Structural Behavior (LABEST). His research interests are within the field of the fire resistance of building structures and other construction elements such as steel structural elements and their buckling phenomena, where he has been applying numerical analyses.

Roberto A.F. Valente is an Assistant Professor of Mechanical Engineering at the University of Aveiro, Portugal, and has received his PhD in Mechanical Engineering from the Faculty of Engineering of the University of Porto (2004). He is currently the Head of the GRIDS Research Group, the largest research group of the Center for Mechanical Technology and Automation (Department of Mechanical Engineering, University of Aveiro). His research interests include the development and implementation of new finite element formulations, multi-scale constitutive modelling and, more recently, isogeometric analysis (IGA), with the goal of creating high-performance software codes for industrial applications. He was awarded (2010) with the Young Investigators Prize by the Portuguese Association of Theoretical, Applied and Computational Mechanics (APMTAC).

Humberto Varum is currently an Associate Professor with habilitation of Civil Engineering Department at the University of Aveiro, Portugal, where he teaches since 1997. He has been Seconded National Expert to the European Commission in the period July 2009 to August 2010, at the Joint Research Centre. He is member of the National Committee of the International Council on Monuments and Sites (ICOMOS), since 2009, and expert member of the ICOMOS's International Scientific Committee of Earthen Architectural Heritage (ISCEAH). His research experience combines large-scale earthquake testing and non-linear analytical modelling of structural systems. His main research interests include assessment, strengthening and repair of structures, structural health monitoring, earthquake engineering and structural dynamics, earth construction rehabilitation and seismic strengthening.

This special issue of the *International Journal of Materials Engineering Innovation (IJMatEI)* includes seven research articles related to different areas within the topic 'computational mechanics and methods in applied materials engineering'.

The papers in this special issue come from a selection of contributions of the first Young Investigators Conference – YIC2012 (April 2012, Aveiro, Portugal), an initiative of the European Community on Computational Methods in Applied Sciences (ECCOMAS). The present selection aims to introduce some of the most relevant and promising contributions to the state-of-the-art of computational methods in applied mechanics and materials engineering.

Computational methods in science and technology have been gaining importance in the industrial and scientific communities and have been a major topic at a large number of conferences, forums and symposia. The main goal of the ECCOMAS Young Investigators Conferences, namely the YIC2012, is to periodically bring together young researchers and students working in a wide number of areas of computational science and engineering. The focus of YIC2012 was particularly posed on the applications of mathematical, computational methods and modelling to different areas of simulation in engineering.

Guest Editors Professors Andrade-Campos, Lopes, Valente and Varum greatly acknowledge Inderscience Publishers' team for their professional support throughout the preparation of this special issue. Finally, the editors would like to thank all the authors and all the referees for their availability and their thorough evaluations of the papers appearing in the present special issue. The guest editors hope that this special issue can help in stimulating more research and new achievements on the related topics.