

# SUSTAINABILITY DAYS 2019



in Civil, Environmental and Building Engineering  
**Interdisciplinary Symposium**  
July 1-2, University of Salerno, Italy



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## Welcome

Sustainability, with its multifaceted implications, is nowadays recognised as one of the main priorities and challenges in all human activities. Specifically, designing and implementing industrial processes characterised by low environmental impacts, profitable economic results and relevant societal benefits is generally assumed as the main driver in any modern production sector.

Human activities, the construction sector and, more generally, all the activities generally encompassed in disciplines as interconnected - yet distinct - as environmental, building and civil engineering, are fully concerned by the effort to turn current practices into more sustainable processes, with the aim to reduce carbon emissions, mitigate depletion of natural resources and preserve cultural heritage.

The Interdisciplinary Symposium entitled "*Sustainability in civil, environmental and building engineering*" is intended to realise a platform for researchers working in the aforementioned disciplines to disseminate the most recent results of their activities and exchange experiences and visions, with the aim to trigger interdisciplinary collaborations on cross-cutting issues of common interest.

Therefore, the Symposium consists of three main sessions, each one focussing on a specific subject, and some common activities, meetings and round tables, during which interdisciplinary is expected to emerge and produce its main benefits.

Finally, the first edition of this Interdisciplinary Symposium is expected to have a prosecution in the coming years with the aim to enlarge the exchanges among researches concerned with sustainability-related topics, but usually confined in different scientific sectors. Actually, enhancing sustainability is a cross-disciplinary challenge and this scientific event aims to bring together fresh energies to meet and face that challenge.

We are grateful to the Department of Civil Engineering and the University of Salerno for their support. We also thank all the speakers and participants for joining us. Finally, a special thanks to our young organising committee members for their enthusiastic and tireless efforts to make this event a reality.

Welcome to Sustainability Days 2019.

Conference Chairmen  
Salvatore Barba, Enzo Martinelli and Vincenzo Naddeo



## Symposium Chairmen

Salvatore Barba, Enzo Martinelli and Vincenzo Naddeo  
*Department of Civil Engineering, University of Salerno, Italy*

## Conference Organizing Committee

Davide Barbato, Fabiano Castrogiovanni, Carla Ferreyra, Angela Fraiese, Giusy Oliva,  
Marco Pepe, Nahid Pervez, Vincenzo Senatore, Arianna Manuela Pannullo.

## Scientific Committee

Salvatore Barba, Vincenzo Belgiorno, Alessandra Cesaro, Enzo Martinelli, Messina Barbara,  
Vincenzo Naddeo, Tiziano Zarra.

## Organizing Institutions



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*Practicing engineers wishing to claim for professional education credits (CFP) are requested to register for the Symposium on the website [www.ordingsa.it](http://www.ordingsa.it)*



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## Program

### July 1<sup>st</sup> Monday

#### 14.00 - Registration

#### 14.30 - Opening

Vincenzo Piluso

*Director of the Department of Civil Engineering, University of Salerno, Italy  
Delegate for Sustainability at University of Salerno*

Michele Brigante

*President of the Professional Board of Engineers of Province of Salerno, Italy*

Vincenzo Zigarella

*President of the Professional Board of Engineers of Province of Avellino, Italy*

Vincenzo Belgiorno

*Director of the Regional Water Authority, Campania Region, Italy*

#### 15.00 - Research for a Sustainable Future

*Session Chair: Vincenzo Belgiorno (University of Salerno, Italy)*

#### Horizon Europe - the next research and innovation framework programme

*Giuseppe Luca Polizzi (European Commission, Directorate-General for Research & Innovation, Brussels, Belgium)*

#### 15.30 - Technology Innovation for Sustainable Environment

*Session Chair: Vincenzo Naddeo (University of Salerno, Italy)*

#### Options for sustainable desalination

*Hassan A. Arafat (Director, Centre for Membrane and Advanced Water Technology, Khalifa University, Abu Dhabi, UAE)*

#### Challenger in Water-Energy-Food Nexus Approach

*Omar Saif (Embassy of the Kingdom of the Netherlands in the UAE)*

#### From Energy Storage Systems to Water Treatment Technology

*Julio J. Lado (IMDEA energy, Madrid, Spain)*

#### Sustainable waste management practices in Turkey

*Burak Demirel (Bogazici University, Institute of Environmental Sciences, Istanbul, Turkey)*

**Mitigating the climate impacts of the waste sector: A South African perspective**

Gisella Reale (*SARCHI Waste and Climate Change Group, South Africa*)

**From Waste to Resources**

Alessandra Cesaro (*University of Salerno, Italy*)

**July 2<sup>nd</sup> Tuesday**

**10.00 - BIM experiences for building and cultural heritage**

*Session Chair: Salvatore Barba (University of Salerno, Italy)*

**The BIM methodology to support the program work for the Universiade 2019**

Davide Barbato (*BIM-Lab.net, Italy*)

**Projecting Information for Condition Survey**

Andrea Giordano, Paolo Borin (*University of Padova, Italy*)

**BIM for Cultural Heritage**

Antonella di Luggo, Massimiliano Campi (*University of Napoli "Federico II", Italy*)

**Amphorae: BIM to digital computation**

Adriana Rossi (*University of Campania "L. Vanvitelli", Italy*)

**Modelling the degradation: a BIM-Oriented application**

Raffaella Napoletano (*University of Salerno, Italy*)

**PetroBIM: a new tool for the restoration, conservation and management of cultural heritage**

Alberto Armisén Fernández (*PetroBIM, Spain*)

**13.00 - Lunch Break**

**15.00 - Sustainability of cementitious composites:**

**the SUPERCONCRETE Project (H2020-MSCA-RISE 2014 n.645704)**

*Session Chair: Enzo Martinelli (University of Salerno, Italy)*

**Characteristics of concrete manufactured with steel slag as binder**

Dolores Rubio Cintas (*Universidad de Cadiz, Spain*)

**Integrated approaches for the flexural and shear design of FRC structural elements**

Joaquim A.O. Barros (*Universidade do Minho, Portugal*)

**Thermal energy storage in High Class Cementitious (HCC) systems produced with MPCM: experimental activities and micro-to-meso scale modelling**

Antonio Caggiano (*Universidad de Buenos Aires, Argentina*)

**Sustainability assessment of low carbon concrete**

David García (*Fundacion Tecnalía, Spain*)

**Sustainable Construction Materials; Now and in the Future**

Eddie Koenders (*TU Darmstadt, Germany*)

**Bio-Based materials as regenerative solutions in Brazil**

Romildo Dias Toledo Filho (*Universidade Federal do Rio de Janeiro, Brazil*)

**17.30 - Discussion**



## Symposium Chairmen



**Salvatore Barba** is associate professor at the University of Salerno in disciplinary area “Architectural Drawings” and Contract Professor at the Faculty of Architecture in Matera of the University of Basilicata. In 2006, he achieves a Ph.D. in Structural Engineering and Urban Restoration at University of Salerno with the doctoral dissertation on digital technologies for distance surveys. From 2007 to 2013, he was Contract Professor at Polytechnic of Milan. He is the coordinator of several international research projects as: “Low-cost 3D applied to works of art of Chillida and Oteiza”, with Spanish National Program, 2012-15; “Laboratory of survey in the archaeological area of Paestum”, with the Archaeological Superintendence of Campania, 2011-15; “Great Pompeii project”, with the Ministry of Cultural Heritage, 2015-16; “A spatial and social investigation at the Moxomatsi village, Mpumalanga”, funded by Italy-South Africa joint Research Project, 2018-20. He is author of over one hundred and twenty scientific publications on national and international journals, proceeding and e-books. His papers 3D DIGITIZATION AND MAPPING OF HERITAGE MONUMENTS AND COMPARISON WITH HISTORICAL DRAWINGS and QUALITY ASSESSMENT OF UAV PHOTOGRAMMETRIC ARCHAEOLOGICAL SURVEY won the Best Paper in the CIPA 2013 and 2019, under the auspices of ICOMOS



**Enzo Martinelli** is associate professor of Structural Analysis and Design at the Department of Civil Engineering of the University of Salerno (Italy). His research activities, both theoretical and experimental in nature, cover a wide spectrum of topics including mechanical characterisation of sustainable materials, numerical modelling of structures, and seismic analysis and retrofitting of buildings subjected to earthquake actions. He has coordinated several research projects among which the EU-funded EnCoRe (FP7-PEOPLE-2011-IRSES, n. 295283) and SUPERCONCRETE (H2020-MSCA-RISE-2014, n. 645704). Since January 2018, he is CEO and co-founder of TESIS s.r.l., a Spin-Off company approved by the University of Salerno, working on emerging technologies for structural engineering. Dr. Martinelli has (co-)authored about 300 scientific works, published in international journals, conference proceedings and book chapters.



**Vincenzo Naddeo** is associate professor at Department of Civil Engineering of the University of Salerno (Italy) where he drives research activities as Director of the Sanitary Environmental Engineering Division (SEED). His research focuses on advanced water/wastewater treatment, characterisation and control of environmental odours and environmental impact assessment (EIA). He recently developed advanced biotechnologies for wastewater reuse with simultaneous energy saving and production. He holds 4 patents on water and wastewater treatments by sonolysis and 1 patent on novel electronic nose (e.Nose). From January 2018 dr. Naddeo is CEO and co-founder of Sponge s.r.l., a Spin-Off of the University of Salerno working on Green Environmental Technologies. Dr. Naddeo has (co-)authored over 200 refereed publications in ISI journals, congress proceedings and book volumes.



## Speakers for Session

### Session 1 - Research for a Sustainable Future



**Giuseppe Luca Polizzi** is Research Policy Officer at the European Commission, Directorate General for Research and Innovation responsible for scientific cooperation with GCC countries, Eastern Partnership Countries, and Innovation Pilot Actions in Africa with focus on public health, industrial technologies, and renewable energies. Between 2014 and 2016, he worked at the King Abdullah University of Science and Technology (KAUST), in Saudi Arabia, for the administration of various research Funding Programmes with the USA. He moved to KAUST after 8 years in Brussels (2006-2014), where he was Senior Policy and Funding Executive for Research and Education at the European Union (EU) Office of Scottish Enterprise/ Scotland Europa, the Scottish Government Agency for innovation and growth. He is lecturer and guest speaker on EU Policy and Funding in different organisations; e.g. College of Europe, University of Sassari, University Cattolica of Milan, European Institute of Public Administration (EIPA), University of Glasgow, Edinburgh, St. Andrews and Aberdeen, among others. Between 2004 and 2006 he was Professor in European Law at the University Marconi, in Rome. Graduated from La Sapienza and earned his MA at the Katholieke University of Leuven (BE) in EU policies and administration, he is currently working on his PhD at the VUB on public health and research funding programmes for science diplomacy.

### Session 2 - Technology Innovation for Sustainable Environment



**Hassan A. Arafat** is the director of the Center for Membrane and Advanced Water Technology (CMAT) and professor of chemical engineering at Khalifa University in Abu Dhabi, UAE, where he is working since 2010. His current research interest is in membrane-based desalination, with a focus on third-generation desalination technologies such as membrane distillation (MD) and the development of novel membranes for water applications. He initiated a research trend on sustainable desalination, which integrates multiple multidisciplinary tools to enhance the prospects of deploying desalination, with the aim of achieving water and food security. The concepts behind this trend are captured in his book: *Desalination Sustainability: A Technical, Socioeconomic and Environmental Approach*. Prof. Arafat received his Ph.D. in Chemical Engineering from the Univ. of Cincinnati (Ohio, USA) in 2000 and a BSc in Chem. Eng. From the Univ. of Jordan in 1996. From 2000 to 2003, he worked at Argonne National Laboratory (Illinois, USA) as a postdoc then as a research scientist, developing processes for nuclear waste treatment at the United States Department of Energy (DOE) sites. Between 2003 and 2010, he was a faculty member of the Chem. Eng. Dept. at An-Najah University



(Palestinian Territory). Between 2009 and 2012, he served as an adjunct associate professor of the Biological Eng. Dept. at Utah State Univ. (Utah, USA) and in 2010, he joined the Massachusetts Institute of Technology (Massachusetts, USA) as a visiting professor for six months. He is a recipient of prestigious research fellowships by the US National Academy of Science (USA), the Open Society Foundation (USA) and DAAD (Germany). Through his career thus far, he supervised more than 30 postdoctoral fellows and graduate students and received 23 research grants, exceeding \$13 Million. His research was published in 230 book chapters, journal papers and conference presentations, in addition to two US patents and 50+ keynote and invited talks worldwide. Among other honors, Prof. Arafat received the Khalifa Award for Education, presented by the President of UAE, the Mohammad Bin Rashid Medal for Scientific Excellence, presented by the Prime Minister of UAE, the United States Department of Energy Secretarial Honor Award, the Mondialogo Engineering Award by Daimler AG and UNESCO, and the Univ. of Cincinnati Distinguished Dissertation Fellowship.



**Omar Saif** is a multi-disciplinary professional currently working for the Dutch Ministry of Foreign Affairs as a regional expert on the Water-Energy-Food Nexus. Omar graduated with an M.Eng. in Engineering & Public Policy from McMaster University and the United Nations University Institute for Water Environment & Health (UNU-INWEH) in Canada – focusing on sustainable desalination in the Gulf region. For the past 6 years, Omar has been based in the Middle East, where he worked as a Research Engineer at Masdar Institute in Abu Dhabi focusing on research in the power and water sectors. Omar later joined the Climate Change & Sustainability Services team at Ernst & Young, managing and delivering a wide range of sustainability, green building and energy management projects to clients across the MENA region. Omar's core interest lies in bringing various stakeholders together to tackle the Middle East region's various sustainability challenges through innovative and integrated approaches.



**Julio J. Lado Garrido** holds a Ph.D. degree in Chemistry by Alcalá University of Madrid (2014). Dr. Lado performed his PhD in IMDEA-Water research institute in collaboration with the University of Wisconsin-Madison (UW-Madison, USA) under the supervision of Prof Marc A. Anderson. His PhD was focused on the study of capacitive deionization cells for water softening. In 2014 he obtained a postdoctoral fellowship to join Luis A.M. Ruotolo group at the Federal University of São Carlos in São Paulo (Brazil). There he carried out different studies using biowaste materials for water treatments and energy storage applications. At the beginning of 2017 he got a postdoctoral fellowship from the Comunidad de Madrid and started to work at IMDEA Energy (Madrid, Spain). He is currently developing a Water-Energy Nexus research line focused on electrochemical water treatment processes such as capacitive deionization, battery desalination and electrochemical ion separation processes (EIONS). As result of his scientific career, he is author of 16 scientific publications in international journals and has presented 19 contributions to scientific conferences.



**Burak Demirel** Dr. Burak Demirel earned his BS from the Technical University of Istanbul (ITU) in Metallurgical Engineering in 1994. Dr. Demirel obtained his MSc and PhD degrees from the Institute of Environmental Sciences at Boğaziçi University in the field of Environmental Technology. Between 2005 and 2009, he carried out his post-doc studies at the University of Applied Sciences Hamburg (HAW Hamburg) Germany, as a German Academic Exchange Service (DAAD) scholar at the Faculty of Life Sciences. Currently, Dr. Demirel is working as a full-time faculty member at the Institute of Environmental Sciences at Boğaziçi University since 2009 and he is the Vice Director of the Institute. His main areas of teaching and research interests are biogas engineering, anaerobic digestion process, solid waste management, waste to energy, renewable energy sources and global climate change.



**Gisella Reale** is currently a Research Project Coordinator for the SARCHI Chair in Waste and Climate Change at the University of Kwa-Zulu Natal, Durban, South Africa. She is also Manager of the IWWG-SARB (International Waste Working Group Southern Africa Regional Branch) which is hosted by the SARCHI Chair at UKZN. The IWWG SARB is part of an International Organization which works to disseminate best practice of integrated and sustainable waste management. She is currently working at a number of initiatives promoted by the Sarchi Chair in Waste and Climate Change such as the Green UKZN programme, the Neptune Project, Waste and Resources Management Summer schools, International Training Seminars and CPD courses. In collaboration with SANEDI and the LED Programme at the Graduate School of Business, Gisella is also involved on a bio-energy project in rural areas.



**Alessandra Cesaro** Alessandra Cesaro is lecturer and research fellow at the Department of Civil Engineering of the University of Salerno. She holds a PhD in Civil and Environmental Engineering and in 2017 she obtained the Italian National Qualification for the role of Associate Professor in the Scientific sector of Sanitary Environmental Engineering. Her research interests mainly focus on the sustainable management of solid waste, with particular reference to advanced anaerobic digestion processes for the valorization of organic residues. More recently, dr Cesaro has worked on the identification of innovative strategies for the recovery of valuable materials from Waste Electrical and Electronic Equipment. She was visiting researcher in 2009 at Stuttgart University and in 2012 at the Technical University of Hamburg. In 2015 she was appointed as Substitute Member of the Management Committee of ReCrew COST Action and since 2016 she has been Member of the Scientific Committee of the International Conference on Environmental Science and Technology.



## Session 3 - BIM experiences for building and cultural heritage



**Davide Barbato**, master graduated in Civil Engineering at the University of Salerno. In the 2015 year became PhD in Structural Engineering and Building and Urban Renewal with thesis on “Methodological proposals for the design and management of the existing building heritage”. In the same year he is Research Fellow for the realization of the project “BIM4S for digital preservation, divulgation and study of architecture”, at the Department of Civil Engineering of Salerno. In the 2017 he is Research Fellow for the realization of the project “DATA - Development of Abandoned Transurban Areas” at the Department of Civil Engineering of the University of Padova. Since 2018 is an Adjunct Professor at the Department of Civil Engineering of the University of Salerno. His main research activities concern the study of the interoperability, the 3D modelling and the creation of database in Building Information Modelling and Augmented Reality for facility management. He is also the founder of the Innovative Start-Up BIM-Lab.net that concerned integrated and multidisciplinary design in the fields of architecture, engineering, installations and infrastructure works for years, as well as with management and Facility Management in the BIM environment.



**Andrea Giordano**. Master degree in Architecture, PhD in “Survey and Representation of Architecture and Environment” (VI cycle, Napoli); Full Professor (Drawing) at the University of Padova, where he is Coordinator of the Master Degree Program in Building Engineering and Architecture (unique cycle). Coordinator and member of the Scientific Committee for Civil Engineering and Architecture, he is also responsible of the Laboratory of Drawing and Representation (LDR) and the Laboratory of Information Modeling (LIM) at the Department of Civil, Environmental and Architectural Engineering. He is responsible for the survey, representation, and digital rendition of the Engineering campus. He published several essays on the theory and history of methods of representation, dealing, most recently, with the use of ICT for research in the field of interoperable and semantic representation. His researches deal with: geometric-configurative interpretation of architectural surfaces: the construction of Padua domes; representational codes for the verification of landscape design; new “tools” for the Architectural and Urban Historic Transformations Visualization, Multimedia Representation, and Communication; Building Information Modeling (BIM), Scan to BIM & HBIM; Interoperable Systems for the Cultural Heritage Management and Communication; Virtual Museum and Virtual in Museums. In his laboratories are working the others two co-speakers from the University of Padua: *Paolo Borin*, PhD student, and *Chiara Esposito*, Architect and Building Engineering candidate.



**Antonella di Luggo** is full Professor at the University of Naples Federico II where she teaches since 1998. Master’s degree in architecture, PhD in “Survey and Representation of Architecture and Environment”; Member of the Department of Architecture and of the Interdepartmental Centers of Research Urban Eco, CIRICE and LUPT at the University of Naples Federico II. Member of the scientific board of PhD in Architecture, of the scientific board of the master’s in maintenance and



sustainable redevelopment of the built environment, of the master's in building information Modeling and of the master's in forensic urban planning. Director of the Editorial Board *Grandi Opere*, member of several Scientific Committees of International Conferences. Winner of the Silver Plate Italian Union Drawing in 2004 and winner of the international prize for the enhancement of cultural heritage "Knowledge, protection and management of architectural heritage" in 2013. Project manager of the Research Unit of Naples Federico II within the PRIN 2007 and 2009. Lecturer at several international meetings, she promotes scientific conferences and seminars on topics related to representation and innovative technologies for digital survey and representation. She coordinates research teams working on architectural survey through 3D acquisition systems and advanced representation and modeling techniques in H-BIM systems for architectural and archaeological heritage. She published several scientific books and papers on architectural and urban survey and representation dealing with the use of ICT in the field of interoperable and semantic representation. She will present a work developed with *Massimiliano Campi*.



**Adriana Rossi** summa cum laude degree in Architecture, PhD, currently Full Professor (Advanced Representation Techniques) and Vice Director of the Civil Engineering, Design, Building and Environment Department at Unicampania "Vanvitelli". Formerly Associate professor (scientific sector disciplinary DRAWING) at the Faculty of Architecture at S.U.N., member of the of restricted advicethe Design Culture Department Board ('98-'02) and coordinator of the International Relations Committee participating with the members of the Ateneo Erasmus Placement to the European accreditation of sample courses. She was representative of Researchers and delegate for the Tempus Program and later Socrates-Erasmus. She contributed to international mobility agreements and to the organization of Further education technical courses and of Teaching qualification courses. Scientific advisor for the Virtual Exploration of Architectural Objects Service, she was selected by the Chancellor to set up the photogrammetry laboratory. During the last five years she was visiting Professor at UNIVERSITAT POLITECNICA DE VALENCIA (Escuela Tecnica Superior de Ingenierria de Edificatiòn) and visiting researcher at Nany Yung University in Singapore (School of Art, Design and Media). Member Professor on the international PhD in Design for Innovation of the Engineering Department UNicampania. Her latest scientific interests lie in the organization of digital archives and information systems for the documentation and enhancement of Cultural and archaeological environment heritage. The results of her research activity are recorded in the registry of published scientific work and available on the relevant web.



**Raffaella Napoletano** is a young Architect and Building Engineer with a master degree thesis focused on recovery and conservation of a existing building in Salerno, the "Casa del Mutilato" in Salerno, by a experimentation of a BIM-Oriented methodology. She performed a study on the analysis of degradation and developed a design hypothesis for the recovery of this building, all using the BIM methodology.



**Alberto Armisén Fernández** has developed his entire professional career in the field of Engineering, Architecture and industrial technical projects. He is a Superior Technician in Systems Electronics and BIM Manager by Trojaola&Liste. His beginning of activity in the Department of Petro-physics of the Faculty of Geology, Universidad de Oviedo, in 1992 was the starting point for his direct relationship with ICT. His works focused on working with architectural models and sharing the information associated with them in multidisciplinary environments. She was one of the pioneers in integrating metadata with architectural monuments. In these areas, he has more than twenty interventions and some publications in congresses and national journals (AEDIP, BIM Milton CHANES, BIM Project Management, etc.). He has done dozens of consultancies spread across the national territory in integrations of existing projects in BIM Execution Plan. He has been a BIM Consultant for TYPESA on the Riyadh Metro Lines in Saudi Arabia. He has recently served as an External Consultant BIM for the new Banco Popular Headquarters in Madrid. He founded Trojaola & Liste, which was the first BIM consultancy in Spain and has held contracts with EngWORKS and MillerCo in the US for International projects until 2013. He has created Control BIM, a pioneer in the development of simulated BIM environments and technological viewers linked to ICT. They have created the first Visual BIM environment in the Cloud for non-standard geometric elements and link DB databases to BIM models and the tool/platform pioneer in the application of BIM in Historical Heritage: PetroBIM. He has participated as an expert in several developments for the implementation of ICT and BIM projects in Spain such as PetroBIM, ToolBIM, SegurBIM, etc. Currently he is part of the technical team of several ICT projects oriented to CAD-BIM environments. It is worth mentioning his participation in papers, seminars and conferences.

#### **Session 4 - Sustainability of cementitious composites: the SUPERCONCRETE Project (H2020-MSCA-RISE 2014 n.645704)**



**Dolores Rubio Cintas** is a senior researcher, PhD in Engineering, Industrial Engineering from the University of Málaga (Spain). She is full professor in Mechanics of Continuous Media and Theory of Structures at the University of Cádiz, Spain. Dr. Rubio Cintas is responsible for the research group TEP-951 (ARHENE) of the University of Cádiz working on the reuse of waste in cementitious matrices and their valorisation as a building material. Dr Rubio Cintas has directed and participated in several national research projects as a responsible researcher. At the moment her group is working on very high-performance concrete. Dr Rubio Cintas has published numerous 16 indexed scientific articles, more than 20 conference documents as well as the direction of 5 doctoral theses and two that are in process of realization.



**Joaquim A.O. Barros** is Full Professor of the Department of Civil Engineering of Minho University and coordinator of the Structural Composites Group. He is a Fellow American Concrete Institute (ACI), and active member of several Technical Committees of ACI (440 and 544) and fib (TG 4.1, TG 5.1, TG 4.3), and Convener of the fib TG 2.4.2-Modelling of Fibre Reinforced Concrete Structures. He was a member of the RILEM TC-234-DUC, council member of the IIFC, and of the Scientific Advisory Committee of the Australian "Design Guideline for RC structures retrofitted with FRP



and metal plates: beams and slabs". His research interests include structural strengthening, composite materials, fiber reinforced concrete and the development of constitutive models for the simulation of the behavior of cement based and polymer based materials, and their implementation in software based on the finite element method (FEM). He is the author of more than 650 papers divided by books, chapter of books, journal papers (>170 in ISI journals), conferences, monographs and educational reports. At January 2019 his h-Index-Scopus was 30, while according to the Google scholar the total number of citations was 7147 with an h-index of 43 and an I10-Index of 165, and Researchgate indexes of: RG Score of 41.13, percentile > 97.5%, Citations=4448. He was chairman of 8 international conferences, 4 national conferences, and 7 Seminars/Workshops. He is the co-founder of FEMIX FEM-based computer program for advanced structural analysis. He participates(ed) in 37 research projects (23 as coordinator). Supervisor of 7 Pos-Doc (concluded), 41 PhD (31 concluded) and 33 MSc (32 concluded). He is the founder of the CiviTest Company ([www.civitest.pt](http://www.civitest.pt)). He is co-inventor of the national patent n° 107111, inventor of the national patent n° 108615, and co-inventor of the international patent n° 108611.



**Antonio Caggiano** is a Researcher and Lecturer of the University of Buenos Aires and the National Scientific and Technical Research Council (CONICET) of Argentina. Currently he is working as Alexander von Humboldt Fellow at the Institute of Construction and Building Materials of TU-Darmstadt (Germany). His research interests include micro-, meso- and multi-scale models for coupled thermal-energy storage and fracture mechanisms of HCC-PCM materials. Current activities of Dr. Caggiano include innovations in the construction sector by investigating energy saving concepts, phase change phenomena and self-healing solutions, in order to ultimately reach technologies with low CO<sub>2</sub> emissions. In the framework of SUPERCONCRETE project, Dr. Caggiano co-authored 6 project deliverables, which were mainly dealing with the formulation and implementation of advanced theoretical models for both HCCs and Fiber-reinforced cementitious materials.



**David García** is a senior researcher, PhD in Materials Engineering by the University of Basque Country (Spain). He has been working at Tecnalia since 2006, providing 13 years of experience on building materials research and project management. His current research interest is in the field of eco-innovative materials and products in building and civil applications with special emphasis on the development of cement-based products containing waste materials, low carbon cement based products and highly efficient building products. Additionally, he is also experienced in structural strengthening with advanced composites (FRP and Textile Reinforced Mortars), life cycle assessment (LCA) and new BIM tools for selective demolition and C&DW management. He has been involved in several international research projects. From 2016-2019, he has been the coordinator of HISER project "Holistic innovative solutions for an efficient recycling and recovery of valuable raw materials from complex C&DW" (H2020 GA n° 642085). In 2017, he participated in the study for Pre-demolition Audit Guidelines "Development of specific tools and/or guidelines for assessment of construction and demolition waste streams prior to demolition or renovation of buildings and infrastructures", Specific Contract 30-CE-0751644/00-00 - SI2.720069. He has published 11 indexed scientific papers, more than 30 conference papers and co-authored a book chapter over multi-criteria methods for decision-making.



**Eduardus A.B. Koenders** is a full professor and head of the Institute of Construction and Building Materials (WiB). He is leading WP1 on Multi-scale modelling of the EU-H2020 InnovaConcrete Project on “Innovative materials and techniques for the conservation of 20th century concrete-based cultural heritage” and coordinating the EU-Japan EIC-CONCERT project “Functional POROUS cementitious nanocomposites for heat storage in buildings using Phase Change Materials (PoroPCM)”. He is Chairman of the RILEM TC 270-CIM on “Benchmarking Chloride Ingress Models on Real-life Case Studies: Theory and Practice”, addressing relevant simulation models on chloride ingress and durability calculations in order to advance durability and service-life assessment. He is founder and post-chairman of the RILEM EAC MMC course on Multi-scale modelling and founder of the RILEM EAC course on Computational methods for Building Physics and Construction Materials. His main research directions are sustainability, hydration modelling, energy storage, self-healing and alternative binders. He is Editor in Chief of MDPI Materials section on Construction and Building Materials (open access).



**Romildo D. Toledo Filho** is a Full Professor of Materials and Structures at the Federal University of Rio de Janeiro (PEC/COPPE/UFRJ), Brazil. He is Member of the Brazilian Academy of Sciences and Researcher 1A agreed to the Brazilian National Council for Scientific and Technological Development. He is Director of the Center Brazil-China for Climate Change and Energy Technology Innovation, Head of the Sustainability Center for Research and Education on Environmental Friendly Materials and Technologies (NUMATS) of the Federal University of Rio de Janeiro, President of the Brazilian Society for Non Conventional Materials (ABMTENC) and “INBAR Task Force Expert Member – Bamboo Construction”. He has conducted extensive research on vegetable fibre-reinforced cement composites, bamboo materials characterization, use of bamboo as concrete reinforcement, full-culm bamboo characterization, bamboo-earth construction, bamboo-bioconcrete and rice husk ash and sugar-cane bagasse as mineral additives for concrete, Nanomaterials in cement-based systems, Life-cycle Assessment, Fibre reinforced concrete, Textile Reinforced Concrete, carbon sequestration and reuse of waste materials in building materials. Prof. Toledo Filho is the author of over 190 peer-reviewed journal papers and over 350 technical articles published in Conference proceedings. He has coedited 05 books/proceedings and published 20 book chapters. He has coordinated over 70 R&D&I projects funded by governmental agencies and different industrial sectors.