

SUBLime

Sustainable Multiphysics
Multiscale Tools for Building
Lime Applications

TOWARDS THE NEXT GENERATION OF SUSTAINABLE MASONRY SYSTEMS: MORTARS, RENDERS, PLASTERS AND OTHER CHALLENGES

PROGRAMME

11-12 November 2024



Welcome to the SUBLime Conference

Welcome to the SUBLime Conference – Towards the next generation of sustainable masonry systems: Mortars, renders, plasters and other challenges, Funchal, Madeira, November 11-12, 2024!

The SUBLime Conference is a forum to discuss, exchange ideas and gain insights into challenges, innovations and new trends in masonry. This Conference is held within the scope of the SUBLime Network, a Marie Skłodowska-Curie Action European Innovative Training Network. SUBLime (Sustainable Building Lime Applications via Circular Economy and Biomimetic Approaches) trained researchers in multiple scientific and engineering fields for a better understanding and development of sustainable innovation solutions for mortars, renders and plasters in new construction and conservation of the built heritage. This conference is a key platform for dissemination of the SUBLime's results, together with an opportunity to discuss and share research on sustainable masonry systems and other challenges.

The SUBLime Network contributes with original research in areas that have been relatively unexplored in the context of lime-based materials. These include microstructural and chemical characterization, test methods for delayed effects and durability, simulation of microstructural development, and upscaling towards meso- and macro-scales. The Network also aims to deepen understanding of fundamental mechanisms such as creep and shrinkage, and to develop new functional materials that provide self-cleaning, self-healing, or other capabilities, like accelerated hardening. Innovations are geared towards achieving carbon neutrality or even negativity, aligning with EU objectives on environmental performance.

The scientific programme of the SUBLime Conference comprises four keynote lectures from internationally renowned researchers and is structured in several thematic sessions in different fields of research. The diverse range of topics covered in these proceedings reflect the interdisciplinary nature of the field, spanning advanced material technologies, structural optimization, environmental impact assessments, and real-world applications.

More than 150 participants from more than 30 different countries joined, making the SUBLime Conference a truly international event. An exciting program includes 112 contributions concerning a wide range of activities and research fields in masonry. This conference benefits immensely from joining young researchers with more senior academics and professionals, with PhD students representing 40% of participants, foreseeing a bright future for this community.

We warmly thank the contributors, authors, reviewers, speakers and the sponsors of the event and are sure that the conference offers fruitful discussions and a pleasant time in Funchal, Madeira.

Funchal, November 2024

Paulo B. Lourenço
Miguel Azenha
João M. Pereira

Local Organizing Committee

Paulo B. Lourenço, Universidade do Minho

Miguel Azenha, Universidade do Minho

João M. Pereira, Universidade do Minho

Consortium Organizing Committee

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Nele De Belie, Ghent University

Paulo B. Lourenço, Universidade do Minho

Rodolphe Nicole, EuLA

Ulrike Peter, Lhoist

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Sara Pavia, Ireland
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Tina Oertel, Germany
Ulrike Peter, Belgium
Veerle Cnudde, Belgium
Violeta Bokan Bosiljkov, Slovenia
Wael El-Dakhkhni, Canada

Important Information

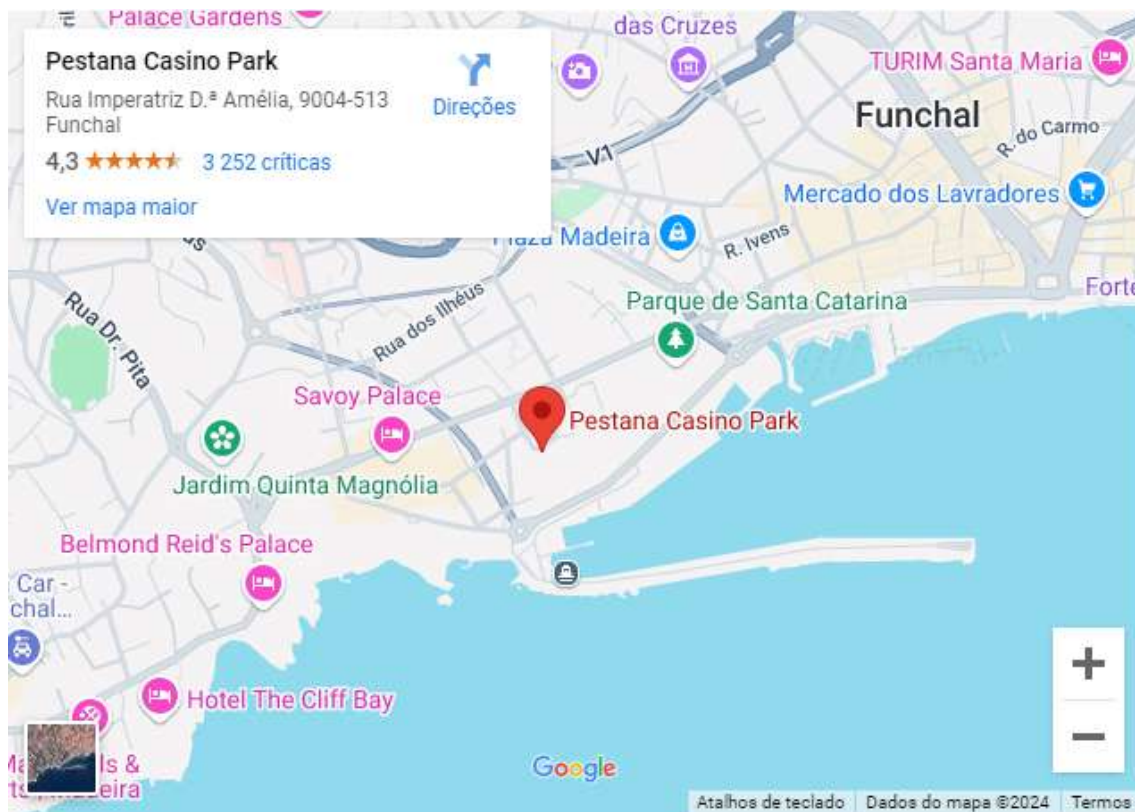
Conference location at the **Pestana Casino Park**

Rua Imperatriz D. Amélia, 9004-513, Funchal, Madeira

GPS:

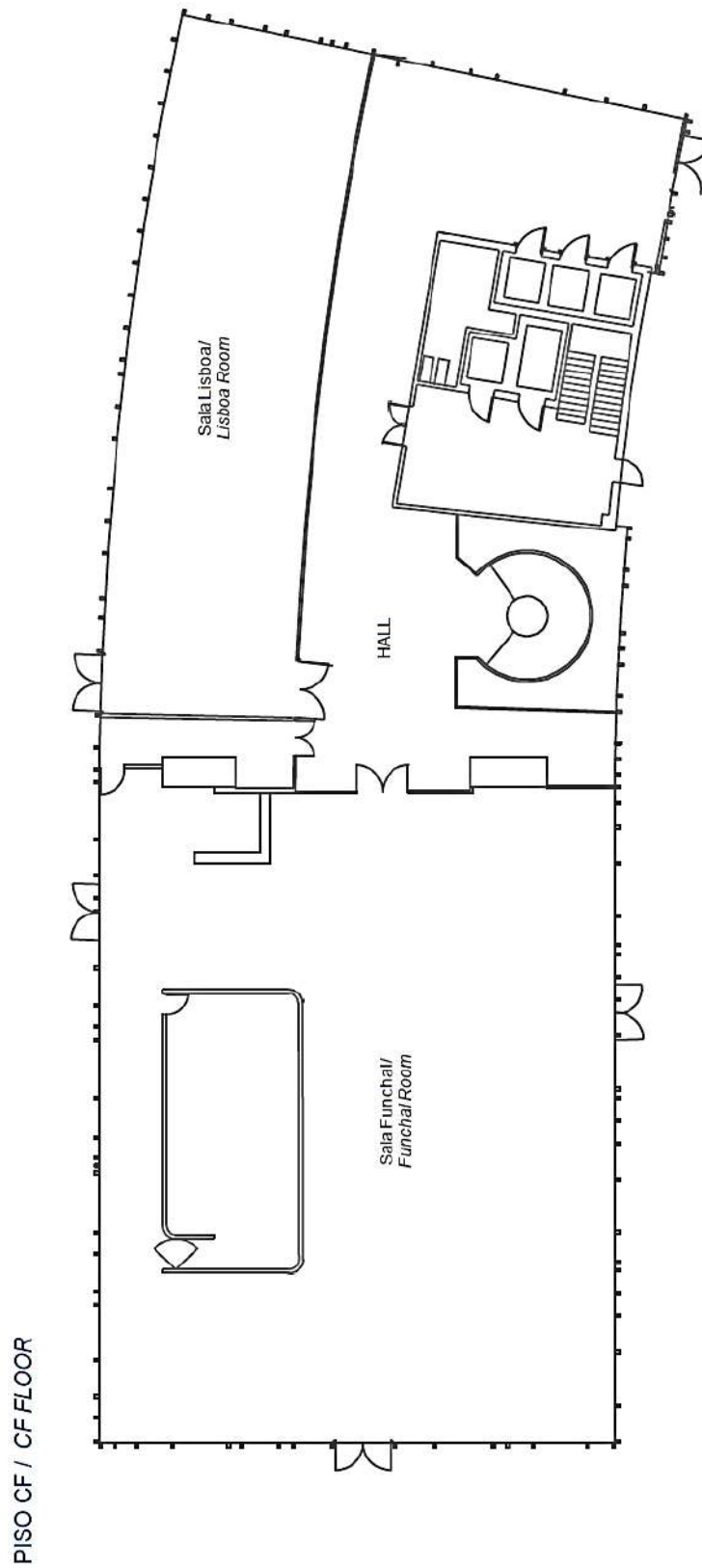
- Lat: N 32 38.631
- Long: W 16 55.039

For directions press [here](#).



Conference Map

Map of the CF floor, where the conference will take place:



Weather forecast for Funchal, November 11-12, 2024

Check the weather forecast [here](#).

Social programme for Funchal, November 11-12, 2024

- **Sunday – November 10th**

SUBLime Tour over Madeira (required previous registration):

- Departure from the Hotel at 09:00.
- Visit to Funchal's Ecological Park.
- Includes a short trail (1.5 km long train + 1.5 km return) at Vereda dos Balcões.
- Lunch at Quinta do Furão.
- Visit to Santana.
- Visit to an historic winery.



- **Monday – November 11th**

Conference dinner at the “O Lagar”



Transportation will be arranged from the Hotel to the dinner location, Camara de Lobos, including return to the Hotel. Additional details regarding the timetable of the buses and the pickup locations will be provided in the Dinner Invitation (available in your conference bag).

Notes for Speakers

- › The SUBLime conference will be running on a tight schedule and your cooperation in making sure the sessions follow to the designated time limit is much appreciated.
- › Each Speaker is allowed a total of 10 minutes + 2 minutes for questions. The chairperson of your session will manage the time for questions and answers.
- › Speakers will be alerted as they approach their presentation time limit (i.e. with a 2-minutes warning).
- › We recommend all Speakers to prepare a presentation with about one slide per minute (maximum of about 10 slides).
- › A computer with projector equipment will be available at each conference room. For presentations, please use PowerPoint or pdf slides.
- › Please bring your presentation in an USB memory device.
- › The presentation should be delivered in the session room as soon as possible, at the most until the beginning of the coffee-break preceding the session in which the paper will be presented.
- › 15 minutes before the beginning of each session, each speaker should introduce himself to the chairperson of the session.

Wireless Network Configuration

- › Users should connect to network **Pestana_Guest**.
- › It is an open network; no login is required.

SUBLime 2024 Detailed Programme

	Sunday 10	Monday 11	Tuesday 12		
08:30					
09:00	SUBLime Tour	Registration <i>Secretariat</i>	Special Session – II (Possibilities and challenges on the use of natural/plant-based fibers as reinforcement) <i>Funchal Room</i>	Mortar properties – I <i>Lisboa Room</i>	
09:30					
10:00		Opening session <i>Funchal Room</i>			
10:30		Coffee-break <i>Coffee Break Hall</i>	Coffee-break <i>Coffee Break Hall</i>		
11:00		Keynote: Koen van Balen <i>Funchal Room</i>		Keynote: Jan Kubica <i>Funchal Room</i>	
11:30					
12:00		Special Session – I (Carbon mineralization in masonry products) <i>Funchal Room</i>	Conservation, repair and strengthening – I <i>Lisboa Room</i>	Mortar properties – II <i>Funchal Room</i>	Conservation, repair and strengthening – II <i>Lisboa Room</i>
12:30					
13:00		Lunch <i>Hotel restaurant</i>		Lunch (includes group photo) <i>Hotel restaurant</i>	
13:30					
14:00					
14:30		Structural and functional performance – I <i>Funchal Room</i>	Testing of materials and systems <i>Lisboa Room</i>	Conservation, repair and strengthening – III <i>Funchal Room</i>	Sustainability and circularity <i>Lisboa Room</i>
15:00					
15:30					
16:00		Coffee-break <i>Coffee Break Hall</i>		Coffee-break <i>Coffee Break Hall</i>	
16:30		Keynote: Carlos Rodríguez-Navarro <i>Funchal Room</i>		Keynote: Tina Oertel <i>Funchal Room</i>	
17:00					
17:30		New mortar solutions <i>Funchal Room</i>	Structural and functional performance – II <i>Lisboa Room</i>	Roundtable on the importance of lime in new applications for the construction industry <i>Funchal Room</i>	
18:00					
18:30	Farewell Cocktail <i>Coffee Break Hall</i>				
19:00					
	Conference Dinner <i>O Lagar</i>				

SUBLime 2024 Detailed programme

November 10

09:00 **SUBLime pre-conference Tour** **Madeira Island**
17:00

SUBLime Tour over Madeira Island.

November 11

08:30 **Registration** **Secretariat**
10:00

Registration

10:00 **Opening Session** **Funchal Room**
10:30

Miguel Azenha, University of Minho
Ulrike Peter, Chair of the Industry Advisory Board (IAB) at SUBLime
Nele De Belie, President of Rilem
João M. Pereira, University of Minho

10:30 **Coffee Break** **Coffee Break Hall**
11:00

11:00 **Keynote** **Funchal Room**
11:45

Chair: Paulo B. Lourenço

Future readiness of lime-based building materials: from heritage to innovation
Koenraad Van Balen

Parallel Sessions

November 11

11:45 **Special Session - Carbon mineralization in masonry products** **Funchal Room**
13:00 **(mortars, renders, concrete and units)**

Chair: Carlos Rodriguez-Navarro and Ulrike Peter

ID271 **Bacterially-promoted carbonation of lime-based building materials**
Franco Grosso Giordano, Carlos Rodriguez-Navarro, Nele De Belie, Nico Boon

ID316 **Evaluating TiO₂ and ZnO as photocatalytic additives in lime plaster for sustainable construction**
Francesco Santoro, Encarnación Ruiz-Agudo, Kerstin Elert, Kerstin Carlos Rodriguez-Navarro

ID348 **Carbonation process of commercial lime mortars vs cement-based mortars: comparative analysis of textural differences, strength and durability**
Ákos Török, Annamária Kis

ID355 **Role of low molecular weight additives on the early-stages of magnesium carbonate mineralization**
Encarnación Ruiz-Agudo, Lisa Huber, Sarah Bonilla-Correa, Francesco Santoro De Vico, Cristina Ruiz-Agudo, Carlos Rodríguez-Navarro

- ID377 **Innovative strategies for accelerating carbonation: unraveling the catalytic potential of Metal-Organic Frameworks**
Teodora Ilic, Encarnación Ruiz-Agudo, Carlos Rodriguez-Navarro
- ID383 **Carbonation depth of lime-based binders: Current measurement methods and limitations**
Yu Zeng, Guilherme Munoz da Silva, Guang Ye
-

November 11

11:45 **Conservation, repair and strengthening - I** Lisboa Room
12:45

Chair: Jan Kubica

- ID267 **Assessment of reinforced overlay for masonry retrofitting: lime vs cementitious plaster**
Manuela Scamardo, Sara Cattaneo, Pietro Crespi
- ID285 **Experimental modal and FEM analysis of a historical building**
Dario Rinaldis, Paolo Clemente, Giacomo Buffarini
- ID313 **Replication of Danish medieval lime plaster for laboratory desalination tests**
Julie Bartholdy, Mette Randrup Midtgaard, Inge Rørig-Dalgaard
- ID338 **The behaviour of orthodox historic churches built with lime mortar in Romania consolidated with reinforced concrete after the 1977 earthquake**
Marius Mosoarca, Filippo Casarin, Endo Yohei, Mihai Fofiu, Mihai Gosta, Anthimos Anastasiadis, Alexandru Hortopan
- ID364 **HBIM for the structural assessment and repair of historic masonry buildings**
Antonella Saisi, Andrea Adami, Paolo Borlenghi, Daniele Treccani, Carmelo Gentile
-

12:45 **Lunch** Hotel Restaurant
14:15

Parallel Sessions

November 11

14:15 **Structural and functional performance - I** Funchal Room
16:00

Chair: Graça Vasconcelos

- ID276 **Automated construction of multi-leave walls with natural stones**
Qianqing Wang, Ketson R. M. dos Santos, Katrin Beyer
- ID280 **Preservation of historic buildings by using modern lime-cement plasters with the addition of phase change materials (PCM)**
Petra Stukovnik, Marjan Marinšek, Violeta Bokan Bosiljkov, Tina Skalar
- ID302 **Experimental Tests of Stone Masonry Walls Strengthened by NSM Glass Fiber Cords: Influence of Cord Layout and Bedding Mortar**
Meta Krzan, Vlatko Bosiljkov, Mark Masia
- ID317 **Characterization of lime based insulating mortars for existing buildings in the EU market**
Iker Gomez Iborra, David Sanz Arauz
- ID330 **The Church of San Giovanni Evangelista in Castelseprio – multi-disciplinary strategies for the characterization of the masonry structures**
Maria Rosa Valluzzi, Michele Secco, Luca Sbrogiò, Valeria Razzante, Alexandra Chavarria Arnau
-

- ID347 **Influence of type of mortar and unit in the flexural strength parallel to the bed-joints of brick-mortar assemblages**
Carolina Briceño, Miguel Azenha, Graça Vasconcelos, Paulo B. Lourenço
- ID374 **Experimental Analysis of the Mechanical Behaviour of Clay Masonry with Mortars Composed of Recycled Mortars**
Ahmad Fathi, João M. Pereira, Rob van der Pluijm, Graça Vasconcelos
- ID378 **Automating Finite Element Model Generation with Python Programming**
Kristian R. Falkjar, Jan Kubica
- ID381 **From meso to macro: homogenization of thermal properties in masonry systems**
Seyed Salar Ahmadi, Rafael Ramirez, João M. Pereira, Miguel Azenha
-

November 11

14:15 **Testing of materials and systems** **Lisboa Room**
16:00

Chair: Miguel Azenha

- ID272 **Flatjack application on existing hollow concrete block masonry**
Guilherme Aris Parsekian, Jairo Borges Ferreira Júnior, Gláucia Maria Dalfré, Roberto Marcio Silva
- ID278 **Metrological evaluation of an AI-based vision computing model for crack detection on masonry structures**
Giovanni Salerno, Maria Teresa Calcagni, Milena Martarelli, Gian Marco Revel
- ID331 **Tensile failure mechanisms of historic fibrous plaster ceiling wads: experiments at the UK Diamond Light Source**
Jiaxu Zuo, Kutsi Akcicek, Shivansh Nauriyal, Barrie Dams, Stefan Michalik, Thomas Zillhardt, Martin Ansell, Richard Ball, Genoveva Burca, Brian Sheil, James Marrow, Sinan Acikgoz
- ID340 **Shake table campaign on the out-of-plane response of masonry structures**
Dario Vecchio, Carla Colombo, Georgios Vlachakis, Nuno Mendes, Paulo B. Lourenço
- ID349 **Towards a new method to estimate liquid redistribution coefficients in small fragments of mortar**
Toby Cambray, Valentina Marincioni, Hector Altamirano-Medina
- ID366 **Virtual fields characterisation of elasticity in mortars**
Miles Judd, Marialuigia Sangirardi, Sinan Acikgoz
- ID368 **Proposal of a new method to monitor the loss of workability and setting of mortars**
Monika Pultorak, Thomas Russo, José Granja, Paulo B. Lourenco, Miguel Azenha
- ID380 **Development and validation of a portable adiabatic calorimeter based on cost-effective components**
Thomas Russo, Fragkoulis Kanavaris, José Granja, Miguel Azenha
-

16:00 **Coffee Break** **Coffee Break Hall**
16:30

16:30 **Keynote** **Funchal Room**
17:15

Chair: Nele De Belie

Functionalization of lime mortars and plasters: A biomimetic approach
Carlos Rodriguez-Navarro

Parallel Sessions

November 11

17:15

New mortar solutions

Funchal Room

19:30

Chair: Nele De Belie

- ID263 **Improving the resistance of mortar to NaCl damage by the use of crystallization inhibitors**
Barbara Lubelli, Ameya Kamat
- ID266 **Analysis of mortar with brake lining waste by electrical impedance spectroscopy**
João Batista Lamari Palma Silva, Camilla Tiemi Ozaki Silva, Stephanie Cucolo Marçula, Ariane Roberto Becker, Pedro Serna, Rosa Cristina Cecche Lintz, Luisa Andreia Gachet
- ID290 **Bacteria-based self-healing agent for masonry repair: applicability to cement-lime mortars**
Maria Belen Gaggero, Paul Korswagen, Rita Esposito, Jan Rots
- ID299 **Study of the influence of micro- and nano- cellulose on the growth and carbonation kinetics of portlandite crystals**
Paulina Guzmán García Lascurain, Carlos Rodríguez-Navarro, Irene De Giuli, Lucia Toniolo, Sara Goidanich
- ID300 **Enhancing the sustainability of cementitious composites with the use of industrial by-products as cement and aggregate replacements**
Andreas Kyriakidis, Hassan Jaber, Rafail Panagiotou, Antroula Georgiou, Ioannis Ioannou, Apostolos Michopoulos
- ID336 **Pozzolanic resilience of ancient concrete through magnesium aluminosilicate hydrates formation**
Michele Secco, Simone Dilaria, Giulia Ricci, Maleria Razzante, Alessia Famengo, Yotan Asscher, Gregorio Dal Sasso, Gilberto Artioli, Caterina Previato, Jacopo Bonetto
- ID359 **Testing historical recipes with organic additives to alter the water absorption of traditional lime mortar**
Florence Van Audenrode, Tim De Kock
- ID362 **Organic additive's influence on cement hydrates formation**
Cristina Ruiz Agudo, Annika Bastian
- ID370 **Exploring Lime Mortar Microstructure: Investigating the Impact of Mixed-in Additives and their Role in Salt Efflorescence Inhibition**
Dulce Elizabeth Valdez Madrid, Chandra Widyandana Winardhi, Nele De Belie, Veerle Cnudde
- ID372 **The Healing Masonry prototype: demonstrating the potential of biological self-healing in lime-based mortars**
Magdalini Theodoridou, Derrick Mwebaza, Parthena Vivian Koltsou, Martyn Dade-Robertson, Angela Sherry, Meng Zhang, Dilan Ozkan, Armand Agraviador
- ID384 **Development and characterisation of lime-based mortars incorporating coffee-based products for integrated seismic and energy retrofitting**
Luca Penazzato, Rogiros Illampas, José Teixeira, Daniel Oliveira
-

November 11

17:15

Structural and functional performance - II

Lisboa Room

19:15

Chair: Guilherme Parsekian

- ID288 **Green way of improving the thermal efficiency of mortars by the addition of biobased phase change materials**
Andrea Rubio-Aguinaga, José María Fernández, Íñigo Navarro-Blasco, José Ignacio Alvarez
-

- ID294 **Effect of consolidants on the salt intake of lime mortar**
Anupama V A, Enrico Sassoni, Manu Santhanam
- ID314 **Investigation of the bed joint reinforcement effect on the drift capacity of modern unreinforced masonry walls**
Ernesto Andrés Inzunza Araya, Savvas Saloustros, Katrin Beyer
- ID319 **Modular construction as a promising alternative for the construction of affordable and quality housing**
Duarte Barreira Antunes, Válder Lúcio, Fernando Pinho
- ID333 **The impact of lime as a replacement of cement-based mortar, on the water absorption and rain penetration of masonry**
Bruno Vanderschelden, Ruben Van den Bossche, Nathan Van Den Bossche, Veerle Cnudde, Tim De Kock
- ID360 **A semi-probabilistic approach for assessing material and model uncertainty in the out-of-plane response of URM structures**
Federica Vadalà, Luis C.M. da Silva, Ivo Calì, Paulo B. Lourenço
- ID361 **Durability of a lime-based rendering system exposed to different environmental conditions**
Marina Škondrić, Dimitrije Zakić, Aleksandar Savić, Gordana Topličić-Čurčić, Martin Vyšvařil
- ID373 **Mechanical characterization of Glass Fibre-Reinforced Air Lime-Based Mortars**
Armando Zagaroli, Jan Kubica
- ID382 **Out-of-plane strengthening of slender brickwork veneer masonry walls with different types of glass fiber fabrics**
David Antolinc, Martin Klun, Vlatko Bosiljkov
- ID385 **Feasibility analysis of an innovative manufacturing method for sustainable, highly customisable construction composites**
Shantanu Bhat, Thomas Gries
-

20:30 **Dinner** O Lagar

23:30 *Conference dinner at the restaurant "O Lagar"*

November 12

Parallel Sessions

November 12

09:00 **Special Session - Possibilities and challenges on the use of natural /plant-based fibers as reinforcement for mortars, renders and masonry** Funchal Room

10:30 *Chair: Daniel Oliveira, Juan Li and Bohumil Kasal*

ID260 **Effects of Sugarcane Bagasse Fiber Additives on the Mechanical Properties and Compatibility of Lime-Based Composites with Traditional Lime-Based Mortars**
Karl Patrick Daliposa, Luis Maria Bo-ot

ID346 **Mechanical properties of flax and hemp fibers as a green alternative for FRCM systems**
Tommaso Baroni, Francesca Ferretti, Marco Pavesi, Mazzotti Claudio

- Influence of the addition of sisal fibers on the physical and mechanical properties of mortars**
ID269 *Augusto Carlos Gomes da Silva, Adriana Gomes de Oliveira, Lucas Silveira Batista, Amauri Ernesto Gomes, Luísa Andréia Gachet, Tais Gomes da Silva Righetto, Pedro, Serna, Wislei Riuper Osório, Hidelbrando Jose Farkat Diogénes, Rosa Cristina Cecche Lintz*
- Experimental characterization of lime-based Textile Reinforced Mortar with natural fibers for existing masonry structural strengthening**
ID277 *Marco Pepe, Bruno Paolillo, Rosario Lombardi, Giuseppe Ferrara, Enzo Martinelli*
- Natural additives as reinforcement for mortars: comparative evaluation of gypsum-based plasters with pistachio shells and orange peels**
ID323 *Federica Fernandez, Maria Grazia Insinga, Roberta Basile, Federica Zagarella, Maria Luisa Germanà*
- Effect of Alkaline Environment on the Bond Behavior of TRM Composites Through Single-lap Shear Tests**
ID386 *Nima Azimi, Daniel Oliveira, Katrin Schollbach, Paulo B. Lourenço*
-

November 11

09:00

Mortar properties - I

Lisboa Room

10:30

Chair: Guang Ye

- Material properties of building limes for pointing mortar for renovation and restoration of neo-Gothic churches in Sweden**
ID273 *Paulien Brigitte Strandberg-de Bruijn, Kristin Balksten*
- Portlandite-based clinker-free cement using SCMs, anhydrite, and C-S-H seeding**
ID292 *Xuerun Li, Sergej Friesen, Joachim Dengler*
- CEN Standard sand's influence on mortar properties**
ID311 *Rasmus Stenholt-Jacobsen, Kurt Kielsgaard Hansen, Inge Rörig-Dalgaard*
- Released heat of hydrating particle fractions of Portland cement**
ID334 *Pavel Reiterman, Tomáš David, Vit Šmilauer*
- Does lack of CO2 control in environmental chambers influence the strength and stiffness of hydraulic lime mortars?**
ID353 *Miles Robert William Judd, Dylan Squires, Kutsi Akcicek, Marialuigia Sangirardi, Sinan Acikgoz*
- Impact of Physico-Chemical Characteristics on the Mechanical Strength and Pore Structure of Air Lime Mortars with Isparta Tuff and Banahmeta Additives**
ID357 *Tuğçe Busra Su-Cadirci, Vahiddin Alperen Baki, Omer Dabanli, Juliana, Calabria-Holley, Richard J. Ball*
- Time evolution of the mechanical strength of lime mortars for the characterisation of ancient masonry**
ID365 *Antonella Saisi, Cristina Tedeschi*
-

10:30

Coffee Break

Coffee Break Hall

11:00

11:00

Keynote

Funchal Room

Chair: Carlos Rodriguez-Navarro

Masonry systems: past, present and future
Jan Kubica

Parallel Sessions

November 12

11:45 **Mortar properties - II** Funchal Room
12:45

Chair: *Paulina Faria*

- ID279 **The influence of additives on the characteristics of earth-based mortar on the example of ancient stone structures in the Black Sea Basin**
Ewa Sobczyńska, Andrzej Garbacz
- ID305 **Influence of the composition of alkali-activated lime-metakaolin mortars on compressive strength**
Beatriz Wanderley Gomes, Normando Perazzo Barbosa, Aline Figueirêdo da Nóbrega, Leane Priscilla Bonfim Sales, Diego de Paiva Bezerra
- ID329 **The water retention role in the carbonation of air lime: hero or villain?**
Guilherme da Silva Munhoz, Yu Zeng, Erik Schlangen, Guang Ye
- ID343 **Long-term mechanical properties of lime-pozzolan mortars: The role of amorphous AI2O3**
Martin Vyšvařil, Tomáš Žižlavský, Karel Dvořák, Edyta Spychal
- ID375 **The use of air entraining/plasticizing admixtures in cement-lime masonry mortars: effects on fresh and hardened mortar properties**
Vadim Grigorjev, Miguel Azenha, Nele De Belie
-

November 12

11:45 **Conservation, repair and strengthening - II** Lisboa Room
12:45

Chair: *Ana Velosa*

- ID283 **Organic set accelerators for air lime mortars – heritage conservation aspect**
Athira Vinod Sreeja, Swathy Manohar
- ID306 **An experimental study on the slaking process of natural hydraulic limes**
Clara Parra-Fernández, Anna Arizzi
- ID324 **Florence City Centre Historical Mortars: Digital Image Analysis of thin sections in view of conservation actions**
Alessia Lico, Maya Akouche, Matteo Maria Niccolò Franceschini, Giulia Misseri, Silvia Rescic, Luisa Rovero
- ID342 **Study of the construction techniques, materials and architectural prospectives of ancient monumental structures in Allahabad City, India**
Ambareesh Kumar, Kumar Pallav
- ID289 **Deposition of insoluble calcium phosphate layers by combining finely dispersed calcium hydroxide sols with soluble phosphates**
Antonia Tigrano, Gerald Ziegenbalg
-

12:45 **Lunch (includes group photo)** Hotel Restaurant
14:15

Parallel Sessions

November 12

14:15 **Conservation, repair and strengthening - III** **Funchal Room**
16:00

Chair: *Marius Mosoarca*

- ID298 **Differentiation of binder and aggregate calcite in ancient mortars by high-resolution synchrotron X-ray diffraction**
Julia Atiénzar, Encarnación Ruiz-Agudo, Kerstin Elert, Carlos Rodríguez-Navarro
- ID318 **Characterization of ready-mixed plasters for the conservation of architectural heritage**
Maria Cecilia Caranji, Cristina Corti, Laura Rampazzi, Cristina Tedeschi
- ID325 **Effects of Organic Additives on Portlandite Microstructure During CaO Hydration**
Giovanni Luca Pesce, Cecilia Pesce, Marco Molinari
- ID332 **Nanolime – State of the Art and Recent Developments**
Gerald Ziegenbalg
- ID339 **Sustainable Consolidation of Churches that are historic monuments damaged by earthquakes**
Marius Mosoarca, Mihai Fofiu, Mihai Gosta, Alexandru Hortopan
- ID352 **Cape Verde Air Lime: production and application**
Ana Velosa, Vera Marques
- ID354 **Effect of GO surface treatment on lime-based coating mortars**
Andrea Antolin-Rodríguez, Tânia Santos, Andrés Juan-Valdés, Julia Garcia-González, Paulina Faria
- ID371 **Biomimicry in Built heritage: Mini Vascular Networks for Self-healing Lime-based Mortars**
Cristina De Nardi, Diane Gardner, Tony Jefferson
- ID376 **Development of lime injection grouts for the stabilisation of detached lime plasters with wall paintings in the unique Romanesque round church in Slovenia**
Andreja Padovnik, Vlasta Čobal Sedmak, Ajda Mladenović, Violeta Bokan-Bosiljkov
-

November 12

14:15 **Sustainability and circularity** **Lisboa Room**
16:00

Chair: *Miguel Azenha*

- ID275 **Low-carbon masonry design: mechanical performance and life-cycle analysis of LC3 concrete hollow blocks**
Alice Titus Bakera, Beatrice Malchiodi, Hisham Hafez, Karen Scrivener
- ID282 **Mortars that allow for re-use of whole bricks: a scoping review**
Josephine Vaughan, Milon Howlader, Hoang T. Nguyen, Kate T.Q. Nguyen
- ID286 **Towards improved quality of reused fired clay bricks: Durability**
Inge Röriq-Dalgaard
- ID291 **Closing the loop in lime-based renders: circular design, material properties and cradle-to-cradle LCA**
Agustín Laveglia, Dulce Valdez Madrid, Neven Ukrainczyk, Veerle Cnudde, Nele De Belie, Eddie Koenders
- ID295 **Protecting and coating mortars completely substituting their granular skeleton for recycled materials**
Natalia Agustine Valoni, Isabel Fuencisla Sáez del Bosque, Agustín Matías Sánchez, María Isabel Sánchez de Rojas Gómez, César Medina Martínez
-

- ID315 **Comparative study on stabilized oyster shells adobes: mechanical resistance, durability and GHG emissions assessment**
Deborah Arduin, Lucas Rosse Caldas, Cristina Costa Claro, Fernando Rocha, Slávka Andrejkovičová
- ID322 **Low CO2 emission cement from alkali-activated gravel wash mud and quartzite dust**
Karlis Kukemilks, Jean-Frank Wagner
- ID345 **Masonry walls from reclaimed concrete demolition waste**
Jakov Oreb, Haris Čurić, Igor Tomić, Katrin Beyer
- ID351 **SLAG-BASED ONE-PART alkali-activated MATERIALS FOR SUSTAINABLE constructions**
Edoardo Verza, Laura Bergamonti, Elena Michelini, Daniele Ferretti, Simone Bandini, Luca Laghi, Giulia De Aloysio, Claudia Graiff
-

16:00 **Coffee Break** **Coffee Break Hall**
16:30

16:30 **Keynote** **Funchal Room**
17:15

Chair: Miguel Azenha

Sustainable mortars and plasters from an industrial point of view
Tina Oertel

17:15 **Roundtable on the importance of lime in new applications for the** **Funchal Room**
18:15 **construction industry**

Moderator: Paulo B. Lourenço

*Rodolphe Nicolle – EuLA
Frederik Verhelst – Lhoist
Tina Oertel – Sievert
Larisa Soporan – Carmeuse
Edward Arnott – Singleton Birch
David Wilson – Tarmac
Markus Schmid – Fels
Clemens Unger – Wienerberger*

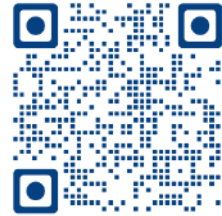
18:15 **Farewell Cocktail** **Coffee Break Hall**
19:15

E-Presentations

ID268 [Thermal properties of new ceramic biomaterial for building façade](#)
Kaltrina Spahiu, Todorka Samardzioska, Kiril Gramatikov, Violeta Nushi



ID274 [Conceptual design of a modular Expanded Polystyrene \(EPS\) formwork for sustainable prefabricated concrete slab](#)
Alessandra Martinelli, Albina Scioti, Fabio Fatiguso, Francesco Fiorito



ID293 [Seismic assessment and structural design improvement of a compressed earth bloc masonry building](#)
Noura Zarzour, Maria Paola Santisi d'Avila, Luca Lenti, Michel Oggero

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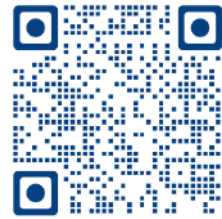
ID281 [New recipes of mortars for Romanian architectural heritage consolidation](#)
Alina Mosiu, Rodica-Mariana Ion, Marius Mosoarca, Lorena Iancu, Ramona Marina Grigorescu



ID287 [Criteria for water absorption by capillarity and water vapour resistance in masonry rendering mortars under tropical conditions](#)
Alexandre Cordeiro dos Santos, Osmar Hamilton Becere



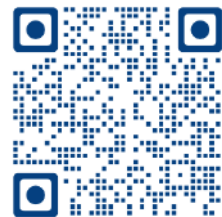
ID296 [Characterization of a Bio-Composite Material Based on Date Palm Fibre and the Naturel Hydraulic Lime for Architectural Restoration](#)
Mohamed Aymen Kethiri, Cristina Tedeschi



ID303 [Comparative study of moisture absorption and resistance to NaCl salt of clay-based plasters incorporating porous aggregate](#)
Lilija Kushnierova, Bahman Ghiassi, Myat Khine



ID304 [MECHANICAL CHARACTERIZATION OF ADOBE WITH NATURAL FIBER IN THE ANDEAN ZONE OF BOLIVIA](#)
Nicole Alejandra Ceballos Cruz, Oscar Fabricio Zuleta Inch, Mauricio Gaston Prudencio Salcedo, Alvaro Quisberth Huayllani, Luis Ignacio Jimenez Astorga



ID307

[Bricks, Mud and Lime Mortars in Heritage Restoration: A case study](#)

Pooja Amatya, Rohit Ranjitkar, Prachand Man Pradhan, Lochan Rijal



ID308

[New methodology for obtaining the dynamic and static elastic modulus in mortars using destructive and non-destructive techniques](#)

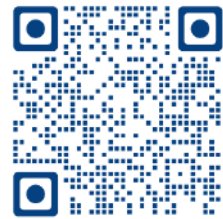
Ángel Aragón Torre, Heriberto Pérez Acebo, Guillermo Aragón Torre, Miguel Ángel Salas García



ID310

[Carbon sink role of lime-based construction units](#)

Luciano Sambataro, Neven Ukrainczyk, Eddie Koenders



ID312

[Improving the strength of Metakaolin-Lime based binder](#)

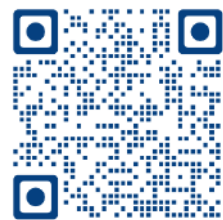
Mert Öztürk, Leyla Tanaçan, Kübra Ekiz Barış



ID326

[Biobased mortars in the Mediterranean context: the contribution of the CUBÂTI project within cross-border cooperation](#)

Federica Fernandez, Khitem Mensi, Tiziana Campisi, Simona Colajanni, Antonella Mami, Elvira Nicolini, Manfredi Saeli, Maria Luisa Germanà



ID327

[Characterization of the degradation rate of ceramic-tiled facades](#)

Ana Luiza Souza, Matheus de Souza Silva, Elton Bauer



ID335

[Influence of adding lime to cement-based mortar over the evolution of carbonation and hydration processes](#)

Carolina Briceño, Miguel Azenha, Graça Vasconcelos, Carlos Rodriguez-Navarro, Paulo B. Lourenço



ID337

[Engineering bio-based binding materials for restoration purposes of carbonate stone](#)

Matea Urbanek, Felix Lücke, Marie-Luise Lemloh, Denis Gebauer

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ID341 [Life-cycle analysis of cement mortars with ladle furnace steel slag](#)
Adriana Estokova, Vojtech Vaclavik, Natalia Junakova, Tomas Dvorsky, Radek Papesch

ID350 [NEW HYDROPHOBIC TREATMENT FOR THE PROTECTION OF GYPSUM ARTIFACTS](#)
Laura Bergamonti, Edoardo Verza, Gilberto di Virgilio, Giacomo Muroli, Elena Michelini, Daniele Ferretti, Pier Paolo Lottici, Claudia Graiff

ID358 [A Research on Developing Zeolite Based Lime Mortars](#)
Rukiye Tüter, Cem Baççioğlu, Cansel Özkan, Leyla Tanaçan

ID363 [Sustainable cement mixtures based on sediments as a filler](#)
Natalia Junakova, Adriana Estokova, Magdalena Balintova, Alena Sicakova, Jozef Junak

ID369 [Integrated Seismic and Energy Retrofitting of Masonry Elements Strengthened with PCM-enhanced GTRM/FRCM systems](#)
Abbas Fathiazar, Mahdi Zanjani, Ignacio Peralta, Serena Cattari, Silvia De Angeli, Victor Fachinotti, Antonio Caggiano, Sergio Lagomarsino

ID379 **Mechanical response of free-standing masonry walls in archaeological sites: Insights from numerical analysis**
Rafael Ramirez, Simon Szabó, Bora Pulatsu, Paulo B. Lourenço



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