



## **Workshop “Lime based materials for repairing historic Structures”**

**RILEM TC 277-LHS**

**3-4 February 2022**

**Hybrid event** (physical and virtual attendance)

Aristotle University Research Dissemination Center, Thessaloniki, Greece (KEDEA)

### **Scientific Program**

Dedicated to the memory of

Prof. Luigia Binda, Polytecnico di Milano

Dr Eric F. Hansen, Getty Conservation Institute

Dr Thorborg Von Konow, Conservation Institute

**Thursday 03/02/2022**

**Opening ceremony**

Chair: I. Papayianni, L. Toniolo

10:00-10:30 Welcome to University

**I. Papayianni**, Chairman RILEM TC 277-LHS

**L. Toniolo**, Politecnico di Milano

**M. Arakadaki**, Director of the Int. Program of Post Graduate Studies 'Protection, Conservation and Restoration of Cultural Monuments', Faculty of Engineering, AUTH  
Welcome to the RILEM TC 277-LHS

**E. Sassoni**, RILEM Cluster E Convener, University of Bologna

**C. Groot**, TU Delft

10:30-11:00 Speeches honoring the memory of

Prod. Luigia Binda, Dr Eric F. Hansen, Dr Thorborg Von Konow

**A. Taliercio**, Politecnico di Milano

**K. Van Balen**, Katholieke Universiteit Leuven

**K. Balksten**, Uppsala University

**Session 1** (Invited speakers)

Chair: I. Papayianni, J. Valek

11:00-11:15 Progress of RILEM TC 277-LHS

**I. Papayianni**, Aristotle University of Thessaloniki

11:15-11:45 The activity of CEN TC 346 conservation of cultural heritage from 2004 to 2021

**V. Fassina**, Istituti Santa Paola Mantova

11:45-12:05 Investigation on lime mortars in archaeological masonry: a contribution to knowledge and structural analyses

**M.R. Valluzzi, M. Secco**, University of Padova

12:05-12:25 Studying the durability of lime-based mortars: standardised, stochastic, and in-situ weathering tests

**A. Arizzi, G. Cultrone**, Universidad de Granada

12:25-12:50 Discussion

**12:50-13:10 Coffee break**

**Session 1** (Invited speakers)

Chair: M. Stefanidou, N. Maravelaki

13:10-13:30 Natural hydraulic limes: how rigorous is their classification?

**A. Arizzi, G. Cultrone**, Universidad de Granada

13:30-13:50 The evolution in injection grouts design for the repair and strengthening of historic masonry structures: a review of literature

**E.E. Toubakari**, Hellenic Ministry of Culture

Opening Ceremony / Session 1

Session 1 / Session 2

**Session 2** Regulative frames for testing quality/performance of lime based materials (I-b-m)

Chair: M. Stefanidou, N. Maravelaki

13:50-14:05 Micro-destructive evaluation of lime mortar mechanical properties using the scratching and drilling resistance tools

**L. Kyriakou, M. Theodoridou, I. Ioannou**, University of Cyprus

14:05-14:20 Technical characteristics of LAVA's pozzolanic materials

**C.T. Galmpenis, E. Christoforakis**, LAVA Mining & Quarrying SA

14:20-14:40 Discussion

14:40-15:30 **Lunch break**

**Session 3** Sustainability aspects. Learning from old technologies

Chair: E.E. Toumbakari, I. Ioannou

15:30-15:45 Sustainability of traditional construction

**A. Velosa**, University of Aveiro

15:45-16:00 The rehabilitation of lime: The past that illuminates the future

**M. Riadh Labiadh, C. Tedeschi**, Ecole Nationale d'Ingénieurs de Tunis, Politecnico di Milano

16:00-16:15 Recovery of pigmented mortar technique for the finishing of architectural surfaces inside the Church of Nossa Senhora da Conceição dos Militares in Recife, Brazil

**R. Pérside Omena, B.T.M. de Andrade, P.J. Nuno de Carvalho**, University of Lisbon

16:15-16:30 Analytical characterization and simulation of ancient mortars for sustainability of 700 years old temple in India

**D. Shanmugavel**, SRM Institute of Science and Technology

16:30-16:45 Valorization of Waste Blood as a Chemical Additive in Historical Lime-Based Mortars

**B. Dinç-Şengönül, N. Yüzer, S. Boylu, K. Erdil, Y.A. Gündenede**, Yildiz Technical University

16:45-17:00 Discussion

17:05-17:30 **Coffee break**

**Session 4** Long term performance of repair with I-b-m

Chair: A. Arizzi, A. Velosa

17:30-17:45 Effect of aging and additives on the microstructural characteristics of lime putty

**D. Rani S., M. Santhanam**, Indian Institute of Technology Madras

17:45-18:00 Contribution to the durability testing of the lime based render

**M. Aškračić**, University of Belgrade

18:00-18:15 An investigation of the salt weathering resistance of dry hydrated lime mortar subjected to accelerated carbonation

**V.A. Anupama, M. Santhanam**, Indian Institute of Technology Madras

18:15-18:30 Long-term performance of lime-based repairs in Ireland: case studies 2000-2020

**J. Bolton**, Consultant

18:30-18:45 Discussion

Session 3

Session 4

## Friday 04/02/2022

### Session 5 Retrofitting historic structures with I-b-m / Best practices in field applications

Chair: M. Secco, G. Pesce

Session 5

- 10:00-10:15 Two and Three-Leaf Masonry with Mud Mortars: Strengthening with Hydraulic Lime Grouts  
**V. Nikolopoulou, E. Vintzileou, C.E. Adami, A. Miltiadou, V. Palieraki**, National Technical University of Athens
- 10:15-10:30 Use of lime-based mortar joints to improve compatibility and performance of TRM retrofit layer with historic masonry  
**E. Tsangouri**, Vrije Universiteit Brussel
- 10:30-10:45 The performance of alkali-activated Cappadocia waste earth as repair mortars for on-site applications  
**S. Ozata, B. Akturk, N. Yuzer, E.G. Arun**, Yildiz Technical University, Istanbul & Istanbul Bilgi University, Hasan Kalyoncu University
- 10:45-11:00 Repairing historic structures with lime-based mortar. Practices in field applications  
**M. Sarantidou**, Hellenic Ministry of Culture
- 11:00-11:15 Problems and challenges regarding raw materials used in restoration of monuments and historic buildings. Suppliers point of view  
**I. Mikrou**, Dalkafoukis Oikos Ltd
- 11:15-11:30 Craft skills required when reconstructing medieval lime render on medieval churches on Gotland  
**K. Balksten**, Uppsala University
- 11:30-11:45 Discussion

11:45-12:10 Coffee break

### Session 6 Evolution in science and technology

Chair: V. Pachta, K. Balksten

Session 6

- 12:10-12:25 The characteristics of organic-modified lime putty for repair mortars  
**C. Pesce, G. Pesce, M. Molinari**, Northumbria University, University of Huddersfield
- 12:25-12:40 The role of steam slaking in hot-mixed mortars  
**C. Pesce, G. Pesce, A. Henry**, Northumbria University, Historic England
- 12:40-12:55 Novel techniques for the assessment of injectability and environmental resistance of injection grouts for mosaic conservation  
**F. Santoro, M.C. Dalconi, E. Garbin, M. Bellotto, G. Artioli**, University of Padova
- 12:55-13:10 More than Ten Years Nanolime – Experiences and State of the Art  
**G. Ziegenbalg**, IBZ-Salzchemie GmbH & Co. KG
- 13:10-13:25 Developing a performance assessment methodology for biological mortars used in remediation of historical calcareous stones  
**E.S. Çıplak, K.G. Akoğlu, K. Bilecen, N.Ş. Güçhan**, Konya Food and Agriculture University
- 13:25-13:40 Characterizing authentic mortars and plasters as a tool for the design of conservation mortars in the Venetian Castle, Hora Sfakion, Crete, Greece  
**A. Fotiou, K., I Kapetanaki, P.N. Maravelaki**, Technical University of Crete
- 13:40-13:55 Discussion

**Poster and Sponsors' exhibition**

**Closing Session**

Chair: I. Papayianni, J. Valek, M. Secco

14:00-14:10 Thermal behavior of lime based mortars

**P. Kampragkou, M. Stefanidou**, Aristotle University of Thessaloniki

14:10-14:30 Sponsors' exhibition

**14:30-15:00 Discussion and closing**