**ECBSM**

**Milan, November 7th - 8th, 2024**

***Thursday, November 7th***

8:30 – 9:20. Registration of participants.

9:20 – 9:30. Welcome to ECBSM2024.

**Session 1: Agents and mechanisms of material biodeterioration and bioprotection in outdoor and confined environments**

*Chairs: Jorge Sanjurjo-Sánchez and Lorenza Rugnini*

09:30 – 10:00. **Opening lecture**, Jorge Sanjurjo-Sánchez: “**BIOMINERALS ON HERITAGE STONES AS POSSIBLE FINGERPRINTS OF DECAY”**

10:00 – 10:15. Metagenomic analysis reveals functional traits of Rubrobacter species involved in the rosy discoloration of church frescoes in Georgia.

*Arianna Basile, Alif Chebbi, Marco Tescari, Filippo Pasquale Riggio, Armida Sodo, Flavia Bartoli, Giulia Caneva, and Paolo Visca*

10:15 – 10:30. EVALUATION OF BIODETERIORATION POTENTIAL OF MICROBIAL ISOLATES FROM ACRYLIC CANVAS PAINTINGS IN TROPICAL CLIMATES. *Seka Seneviratne, Zahra F. Islam, Helen L. Hayden, Francesca Cappitelli, Jonathan Kemp, Nicole Tse.* **Online**

10:30 – 10:45. THE ROLE OF BIODETERIORATION ON HISTORIC BUILDINGS: A FOCUS ON CASTLES AND TOWERS IN CAMPANIA. *Alessia Cozzolino, Giuliano Bonanomi, Riccardo Motti*

10:45 – 11:00. Biodeterioration of limestone monuments of the Longmen Grottoes and potential biogeochemical cycles involved. *Xiaoying Zhang， Lu Wang, Xinjian Li, Zilong Fang, Chaolong Ma, Xiaobo Liu.* **Online**

11:00 – 11:30. Coffee break 

*Chairs: Sara Goidanich and* *Patrick Di Martino*

11:30 – 12:00. **Plenary lecture**, Sara Goidanich: “MATERIAL SCIENCE POINT OF VIEW TO THE STUDY OF THE BIOPROTECTIVE ROLE OF BIOFILM ON THE CONSERVATION OF BUILT HERITAGE”

12:00 – 12:15. CONSOLIDATION OF SANDSTONE HERITAGE BY EICP AND MICP: EVALUATION OF LABORATORY AND IN SITU APPLICATION. *Jie Li, Feiqing Zhu, Fasi Wu* **online**

12:15 – 12:30. Biomineralization Activity of Bacteria and Microbial Communities for Bioconsolidation of Archaeological Sites. *Francesca Benedetti and Teresa Rinaldi.*

12:30 – 12:45. Preventive Diagnosis to Improve Conservation Plans: Is the "Oratorio dell'Annunziata" Fresco (Riofreddo, Latium, Italy) affected by Biodeterioration? *Bartoli Flavia, Casanova Municchia A., Catambrone Maria, Di Tullio Valeria, Alessandro Lazzara, Marco Tescari, Visaggio Daniela*

12:45 – 13:00. STRUCTURAL AND FUNCTIONAL DIFFERENCES IN BLACK AND GREEN SUBAERIAL BIOFILMS ON TOMBSTONES: IMPLICATIONS FOR STONE CONSERVATION.*Alessia Marzanni, Jacopo Melada, Maria Landolfi, Davide Ripamonti, Ilenia Battaglia, Beatrice Sarti, Nicola Ludwig, Tanja Mimmo, Francesca Cappitelli, Luigimaria Borruso, Federica Villa*

13:00 – 14:00. Lunch break 

**Session 2: Innovative and non-invasive technologies in stone monuments study and conservation**

*Chairs: Edith Joseph and Federica Villa*

14:00 – 14:30. **Plenary lecture**, Edith Joseph: “GREEN SOLUTIONS AGAINST METAL CORROSION”

14:30 – 14:45. VISUALIZING BIOFILMS WITH MICRO-COMPUTED TOMOGRAPHY: UNLOCKING A NEW DIMENSION IN BIODETERIORATION RESEARCH. *Schröer Laurenz, Balcaen Tim, Boon Nico, De Kock Tim, Kerckhofs Greet, Cnudde Verle*

14:45 – 15:00. In Living Color: exploring the correlation between colors and functionality in subaerial biofilms on stone monuments.*Maria Landolfi, Alessia Marzanni, Edoardo Pasolli, Tanja Mimmo, Francesca Cappitelli, Luigi Borruso, Federica Villa.* **Online**

15:00 – 15:15. INNOVATIVE INORGANIC COATINGS FOR PREVENTION OF STONE BIODETERIORATION: THE “SECURE COATS” PROJECT. *Enrico Sassoni, Chiara Artusi, Elena Bernardi, Elisa Boanini, Martina Cappelletti, Cristina Chiavari, Matteo Cianciavicchia, Luca Cocchi, Elena Cofini, Anna Costa, Alessandro Dal Pozzo, Stefano Fedi, Daniele Ghezzi, Alessio Gabrielli, Gabriela Graziani, Simona Ortelli, Ilaria Zanoni*

15:15 – 15:30. EFFECT OF SUNLIGHT ON THE EFFICACY OF A NOVEL ORNAMENTAL LIGHT THAT HALTS PHOTOTROPHIC COLONISATION ON ARCHITECTURAL HERITAGE: A LABORATORY APPROACH.*Anxo Méndez, Sabela Balboa, Rafael Carballeira, Patricia Sanmartín.* **Online**

15:30 – 15:45. LABORATORY AND FIELD-BASED CONTACT ANGLE METHODS AS A TOOL TO INVESTIGATE WATER REPELLENCY INDUCED BY SUBAERIAL BIOFILMS ON BUILT HERITAGE SURFACES. *Letizia Berti, Sara Goidanich, Gabriele Gianini, Francesca Cappitelli, Federica Villa, Lucia Toniolo, Davide Gulotta*

15:45 – 16:15. Coffee break 

**Session 3: Novel environmentally friendly materials and treatments for sustainable heritage conservation**

*Chairs: Francesca Cappitelli and Lorenza Rugnini*

16:15 – 16:30. NANOPARTICLE SYNTHESES USING MICROBIAL SUPERNATANTS: A NEW APPROACH TO STONE CONSERVATION AND ANTIMICROBIAL EFFICACY**.** *António Carrapiço, Maria Rosário Martins, Pedro Barrulas, Elisabete Carreiro, Ana Teresa Caldeira, José Mirão, Luís Dias.* **Online**

16:30 – 16:45. ESSENTIAL OILS AS SUSTAINABLE BIOCIDES: A GREEN SOLUTION TO CONTROL MICROALGAL BIOFILM IN THE COLOSSEUM.*Roberta Ranaldi, Lorenza Rugnini, Francesco Gabriele, Nicoletta Spreti, Patrick Di Martino, Giada Migliore, Flavia Tasso, Francesco Scuderi, Roberto Braglia, Angelica Pujia, Antonella Canini.*

16:45 – 17:00. YOUNG PROFESSIONALS TESTING THE EFFICACY OF DIFFERENT “GREEN” TREATMENTS ON LITHOBIONTIC COMMUNITIES IN THE GARDENS OF AN HISTORICAL RESIDENCE OF THE HOUSE OF SAVOY (VILLA DELLA REGINA, UNESCO-WHS-823bis). *Marie Claire Canepa, Giada Migliore, Enrica Matteucci, Eleonora Agostini, Sara Baccini, Beatrice Ferrando, Sofia Giletta, Virginia Martinelli, Arianna Zanelli, Elisa Passiatore, Zaineb Ibrjigui, Brahim Cherkaoui el Malki & Michela Cardinali.* **Online**

17:00 – 17:15. NOVEL ENVIRONMENTALLY FRIENDLY BIOCIDAL TREATMENT FOR LIMESTONE AND MARBLE.*Cecile Franc*

17:15 – 17:30. BIOCLEANING OF STONE SURFACES COVERED BY SPRAY PAINT USING A COMMERCIAL BACTERIAL STRAIN. *Cristina Cattò*

17:30 – 17:45. Evaluation of the sustainability of biocIDAl interventios: life cicle assessment applied to the case of Palazzo Rocca Costaguta (Italy). *Elena Bernardi, Letizia Berti, Francesco Arfelli, Federica Villa, Francesca Cappitelli, Davide Gulotta, Luca Ciacci, Ivano Vassura, Fabrizio Passarini, Salvatore Napoli, Sara Goidanich*

18:30 – 21:00. Aperitif and Gala Dinner 

***Friday, November 8th***

08:45 – 9:00. Welcome of participants.

**Session 4: Ecology and modelling of biofilms on heritage surfaces including climate change**

*Chairs Fasi Wu and Francesca Cappitelli*

9:00 – 9:30. **Plenary lecture**, Fasi Wu: “SUCCESSION AND BIODETERIORATION OF MICROBIOMES ON SIMULATED SANDSTONE BLOCKS AT BEISHIKU TEMPLE, CHINA”

9:30 – 9:45. Ecological strategies of bacterial communities in prehistoric stone wall paintings across weathering gradients in the Borana zone, Ethiopia**.** *Gianmarco Mugnai, Luigimaria Borruso, Ying-Li Wu, Marina Gallinaro, Francesca Cappitelli, Tadele Solomon, Andrea Zerboni, Federica Villa*

9:45 – 10:00. MECHANISM OF SANDSTONE DETERATION UNDER REGIONAL ENVIRONMENTAL CONDITIONS: SALT WEATHERING IN THE YUNGANG GROTTOES, CHINA. *Fuzhi Wang, Jizhong Huang.* **Online**

10:00 – 10:15. Red stains of the external marble of Florence Cathedral.*Domenico Celi, Alba Santo, Beatrice Agostini, Brunella Perito*

10:15 – 10:30. Microbial biofilm at “Shalom” Sgraffito Wall Art in Kibbutz Yiftach, Israel: Characterization before Conservation Treatment. *Irit Nir, Anat Sharabi, Hana Barak, and Ariel Kushmaro.* Online

10:30 – 10:45. Microbial diversity and secondary metabolism in the dark alterations forming on the walls of Paleolithic Lascaux Cave.*Zélia Bontemps, Lise Alonso, Danis Abrouk, Pierre Vergne, Gilles Comte, Serge Michalet, Mylène Hugoni, Yvan Moënne-Loccoz*

*10:45 – 11:15. Coffee break* 

**Session 5: Microbial Community Dynamics and Conservation Challenges in Cultural Heritage**

*Chairs: Federica Villa and Patrick Di Martino*

11:15 – 11:30.SPATIAL AND TEMPORAL VARIABILITY OF THE PHOTOSYNTHETIC ACTIVITY OF LICHENS AND OTHER LITHOBIONTS ON THE VERTICAL WALLS OF THE HOUSE OF THE ANCIENT HUNT IN POMPEII. *Marta Cicardi, Mariagrazia Morando, Greta Rao Torres, Daniele Castelli, Laura Guidorzi, Alessandro Lo Giudice, Alessandro Re, Veronica Bellacicco, Simone Guion, Valeria Meirano, Mario Serino, Enrica Matteucci, Arianna Scarcella, Diego Elia, Sergio E. Favero-Longo*

11:30 – 11:45. The role of algicidal bacteria in controlling microalgal growth and biodeterioration in the fountains of the Alhambra and Generalife (Granada, Spain). *Calvo-Bayo I., Fille, S., Romero-Noguera J., Bolívar-Galiano F.* **Online**

11:45 – 12:00. Long-term evaluation of natural biocide solutions to clean limestone surfaces. *Dória Costa, Maria João Revez, Joana Muge.*

12:00 – 12:15. SPATIO-TEMPORAL DYNAMICS OF MICROBIAL COMMUNITIES IN 3 HERITAGE CAVES. *Caroline Talleu, Liudmila S. Shirokova, Céline Pisapia, Faisl Bousta, Bruno Lartiges, Philippe Galant*

12:15 – 12:30. PREVENTION OF THE LAMPENFLORA WITH POM-IL COATINGS IN THE UNDERGROUND POMMERY CHAMPAGNE CELLAR. *Stéphanie Eyssautier-Chuine, Maxime Gommeaux, Ludovic Besaury, Gilles Fronteau, Marine Rondeau, Scott G. Mitchell.*

*12*:*30* – *12*:*45. Poster & presentation awards and conclusions*

*Closing*

* 14:20 – 15:40. Guided tour at the Ca' Granda*

***Saturday, November 9th***

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| *Court* | *10:20 – 11:30. Guided tour at the University Museum of Anthropological, Medical and Forensic Sciences for Human Rights* (https://www.musa.unimi.it/abouteng.html), *MUSA, via Giuseppe Ponzio, 5-7, Milan* |

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| *Microscope* | *11:30-12.40. Visit to Cultural Heritage Microbiology Labs of the University of Milan, via Luigi Mangiagalli 25, Milan* |