



International Course on Stone Conservation SC13

SESSION: Control & prevention of biological growth/Methods for evaluating biocides, bioremediation

INSTRUCTOR: Ornella Salvadori

TIME: Friday, 14th June / 9:30 – 11:00 (1.5 hours)

SESSION OUTLINE

ABSTRACT

Guidelines for preventive conservation indoors and outdoors, microclimate monitoring, aerobiological monitoring and new environmental-friendly strategies (e.g. antifoulants, titanium dioxide). Control of biodeterioration: factors to be considered and evaluated before planning an intervention through mechanical methods, physical methods and chemical methods. Biocides: composition, type of action, efficacy, toxicity, risks linked to their use for the substrate and the environment and methods of application. Methods for evaluating biocides: efficacy assessment in laboratory and *in situ* and evaluation of biocide-substrate interactions. Bioremediation: microorganisms or bio-substances used in cleaning and biocalcification for the consolidation of stone.

Techniques for the study of biodeterioration: microorganisms identification and assessment of the induced biodeterioration.

OBJECTIVES

By the end of this session participants will:

- know preventive measures for biodeterioration;
- be able to choose the best method to control biodeterioration;
- know the essential information on biocides before using them;
- know the methods and the techniques used for the evaluation of biocides;
- know the types of bioremediation tested and applied to date;
- know techniques and methods of investigation of biodeterioration.


CONTENT OUTLINE

- Control and preventive measures for stone biodeterioration.
- The importance to know and compare the biocides.
- Examples of bioremediation.
- The aim of scientific analyses applied to biodeterioration.

READINGS

 = Essential reading material

 = Available online


 Caneva, Giulia, Maria Pia Nugari, and Ornella Salvadori, ed. 2008. *Plant Biology for Cultural Heritage: Biodeterioration and Conservation*. Los Angeles: Getty Conservation Institute. 273-360.


Moreau, Claire, Véronique Vergès-Belmin, Lise Leroux, Geneviève Oriol, Gilles Fronteau, and Vincent Barbin. 2008. Water-repellent and biocide treatments: Assessment of the potential combinations. *Journal of Cultural Heritage* 9 (4): 394-400.



SESSION OUTLINE CONT'D

Nascimbene, Juri., and Ornella. Salvadori. 2008. Lichen recolonization on restored calcareous statues of three Venetian villas. *International Biodeterioration and Biodegradation* 62 (3): 313-18.

 Salvadori, Ornella, and A. Elena Charola. 2011. Methods to prevent biocolonization and recolonization: An overview of current research for architectural and archaeological heritage. In *Biocolonization of Stone: Control and Preventive Methods: Proceedings from the MCI Workshop Series*. ed. A. Elena Charola, Christopher McNamara and Robert J. Koestler. 39-52. Smithsonian Contributions to Museum Conservation no. 2. Washington DC: Smithsonian Institution Scholarly Press. <http://hdl.handle.net/10088/16617>

 Tretiach, Mauro, Stephano Bertuzzi, and Ornella Salvadori. 2008. In situ vitality monitoring of photosynthetic organisms by Chlorophyll α Fluorescence techniques. In *In Situ Monitoring of Monumental Surfaces*. ed. P. Tiano and C. Pardini. 279-86. Florence: Edifir.

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