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Arbeitsgruppe Erforschung und
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E I N L A D U N G

zum

V O R T R A G

von

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Nanomaterials and Nanotechnologies for Conservation-restoration and Preservation of Artworks

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akademie der bildenden künste wien
Institut für Naturwissenschaften und Technologie in der Kunst

Universität für angewandte Kunst Wien
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Abt. Chemie - Science Visualization, Abt. Archäometrie

Nanomaterials and Nanotechnologies for Conservation-restoration and Preservation of Artworks

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Abstract

Nanomaterials exhibit excellent chemical-physical features[1] at the nanoscale levels, very useful for application in the conservation science of art works, leading to new analytical methodologies that can slow down the degradation processes of Cultural Heritage or even recover them from the damages introduced by aggressive conventional bio-chemical agents[2]. In particular, in this study several restoration and preservation strategies, based on new nanomaterials, have been applied on art work surfaces, located in indoor and outdoor environments, respectively. A quantitative evaluation of the efficiency of these new treatments has been carried out and also compared with the analytical performances exhibited by the traditional methods, widely described in literature[3].

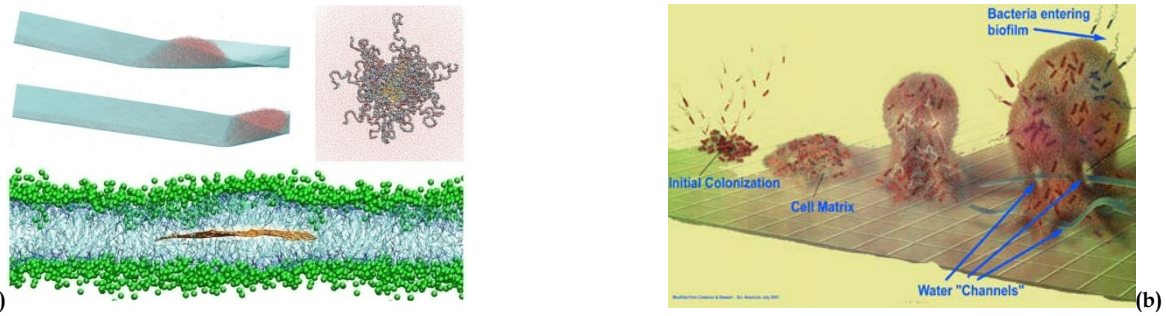

Figure1. (a): nano-Graphene acts as nano-carrier to deliver enzymes for cleaning of art-work surfaces, minimizing the biofilms thickness and inhibiting biofilm growth; and **(b):** a molecular architecture of the biofilms, strongly anchored on the art-work substrata and surfaces.

References

1. Piero Baglioni and Rodorico Giorgi, *Soft and hard nanomaterials for restoration and conservation of cultural heritage,* Soft Matter, **2006**,2, 293-303.
2. Marc Aucouturier and Evelyne Darque-Ceretti, ***Tutorial Review**: The surface of cultural heritage artefacts: physicochemical investigations for their knowledge and their conservation*, Chem. Soc. Rev., **2007**,36, 1605-1621.
3. Francesca Cappitelli, Lucia Toniolo, Antonio Sansonetti et al.; *Advantages of Using Microbial Technology over Traditional Chemical Technology in Removal of Black Crusts from Stone Surfaces of Historical Monuments,* Appl. Environ. Microbiol. September **2007** vol. 73 no. 17 5671-5675

CV

EDUCATION

1993–1998: Degree in Chemistry from the Sapienza University of Rome, with a thesis entitled: "the role of nitrous acid in the Arctic troposphere", in collaboration with CNR-Institute for Atmospheric Pollution.

2000-2003: PhD Thesis in field of electrochemical sensors for the detection of the 17-β-estradiol in waste waters" under supervision of *Prof. Dr. Dario Compagnone* (Chemistry Dep. in Tor Vergata University, Rome), *Prof. G. Palleschi* (Head of the Chemistry Department).

2008-2010: Degree in Science & Technology of Materials from the Tor Vergata University of Rome, with a thesis entitled: "Synthesis, characterization and analytical applications of multi layers of Graphene Oxides (GO)"; under supervision of *Prof. G. Palleschi* (Head of the Chemistry Department, Tor Vergata University) and Prof. Franco Cataldo (Full Professor in Chemistry Department, Tor Vergata University).

PROFESSIONAL EXPERIENCE

02/2005-10/2005: Postdoctoral Studies at the Biodesign Institute of Arizona State University; Research cooperation with Prof. Dr. Joseph Wang (Synthesis and characterization of nanomotors, nanopropellers and nanomachines for application of fuel cells and drug delivery in nanomedicine).

PAST AND PRESENT RESEARCH GRANTS

Polarnet 1998-1999: Fellowship at CNR-Rome-Istituto Inquinamento Atmosferico, financed by the Artic Pollution projects; (40,000 Euro)

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