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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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Conservare, 21 rue des Cordeliers, 60200 Compiègne, France

Characterization of Cultural Artefacts and Their Environment Using Electrochemical Techniques

Dienstag, 22. April 2008, 16:00 Uhr

Institut für Kunst und Technologie
Salzgries 14, 1010 Wien
Seminarraum, 1. Stock

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Abt. Chemie - Science Visualization, Abt. Archäometrie

Abstract

Adequate characterisation of elements belonging to their matter can provide precious information about origin, use and interaction with the environment. Among the numerous –often complementary – analytical methods used to evaluate the stability of the object as well as about the applicability of any treatment, electrochemical techniques are an interesting alternative. They gather several of the requested advantages when working with cultural heritage artefacts, such as non invasiveness, quantitative and chemical composition information, with a high precision. In practice, surface products are collected by contacting the object with a paraffin impregnated graphite electrode (PIGE), which is next connected to a potentiostat in a classical 3-electrode electrochemical cell. By scanning the potential in the adequate range, current peaks are observed, which correspond to species reacting at the electrodes surface and allow their identification. Even with rather small amount of material, which can moreover be taken selectively, in a localized region, a very useful signal is obtained. To perform materials identification an appropriate database was first established, by optimizing operational conditions so that metals and their compounds could be assigned to observed oxidation or reduction peaks. The technique was then applied to answer different questions about provenance and manufacture of objects and also about the impact of the conservation conditions on their stability. Examples of investigation on historical and archaeological objects will be shown and discussed together with appropriateness of realized treatments and environmental conditions to conserve them.

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Virginia Costa qualified as Engineer in metallurgy in Brazil and presented her PhD on surface electrochemistry at the TU-Berlin (Germany). As professor at the Federal University in Porto Alegre (Brazil) she specialised in corrosion and protection of metals. Since then she has been applying her scientific and technical background, giving lectures on metals conservation while acting as freelance expert at international level. She has written articles and organised numerous training courses on the use of electrochemistry and metallography for analysis and conservation of metals. At present, she is lecturer at the Institut National du Patrimoine and conservation scientist for Conservare, working in different research projects in collaboration with the Laboratoire de Recherche des Monuments Historiques (LRMH), the Centre de Recherche et Restauration des Musées de France (C2RMF) and the Musée de la Musique.