Screening of archaeological leaded bronze using EIS of microparticulate deposits of corrosion products

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The voltammetry of microparticles, a solid state electrochemical technique of application for analyzing a wide variety of materials [1] was used for characterizing corrosion products on archaeological metals [2] and characterizing historical coinages [3]. This methodology has been inserted with electrochemical impedance spectroscopy (EIS) by applying this last technique to microparticulate deposits of corrosion products of archaeological objects made of leaded bronze. Modeling of EIS data obtained using different electrolytes and bias potentials was described, yielding impedance parameters able to characterize samples from different archaeological sites.

Keywords: voltammetry of microparticles, electrochemical impedance spectroscopy, corrosion products, archaeological leaded bronze

References:

[1] F. Scholz, U. Schröder, R. Gulaboski, A. Doménech-Carbó, Electrochemistry of Immobilized Particles and Droplets, 2nd edition, Springer, Berlin-Heidelberg, 2014.

[2] A. Doménech-Carbó, M.T. Doménech-Carbó, M.A. Peiró-Ronda, 'One-touch' voltammetry of microparticles for the identification of corrosion products in archaeological lead, Electroanalysis 23 (2011) 1391-1400.

[3] A. Doménech-Carbó, M.T Doménech-Carbó, T. Pasíes, M.C. Bouzas, Modeling corrosion of archaeological silver-copper coins using the voltammetry of immobilized particles, Electroanalysis 24 (2012) 1945-1955.

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