

**Identification, Recovery and Improvement of Ancient Mediterranean Ceramic Manufacturing Technologies for the Reproduction of Ceramic Artefacts of Archaeological Value**Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation
48 Vass. Constantinou Ave., 11635, Athens, Greece (www.eie.gr)**OBJECTIVES**

- Identification of raw materials used in the production of ancient Mediterranean ceramics and analytical characterization of archaeological artefacts, by employing modern spectroscopic techniques
- Improvement of manufacturing processes through application of spectroscopic methods, while respecting health and safety regulations
- Dissemination of knowledge
- Coordination of CERAMED project

IMPLEMENTATION

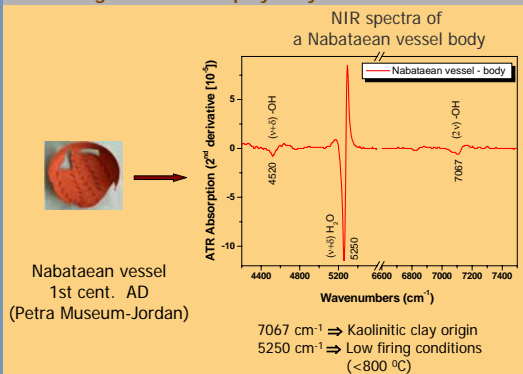
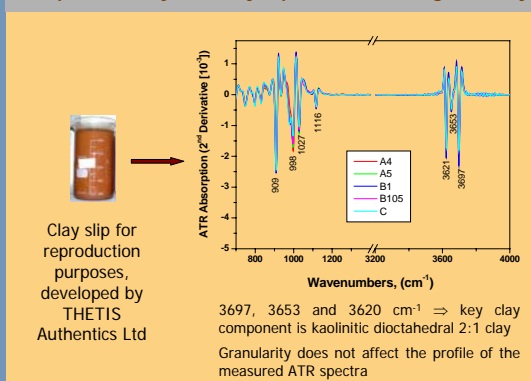
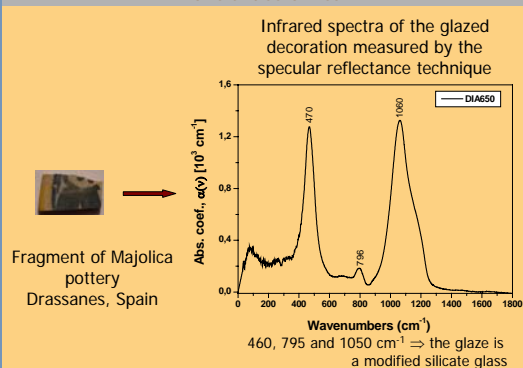
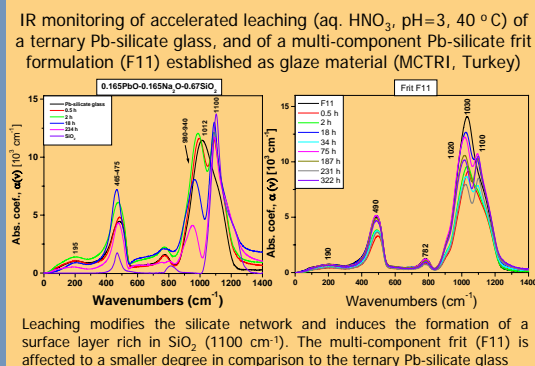
- Evaluation of the applicability of non-destructive vibrational spectroscopic techniques (infrared and Raman) for the characterization of archaeological artefacts and the investigation of raw materials and manufacturing processes
- Establishment of spectroscopic databases concerning raw materials - employed by ancient ceramists - and modern materials related to manufacturing ceramic artefacts (clays, mineral pigments)
- Spectroscopic monitoring of thermal processes used in ceramic manufacturing processes
- Spectroscopic evaluation of safety-related aspects of polychrome glazed ceramics of Iznik type under alterations of environmental conditions

NON-DESTRUCTIVE SPECTROSCOPIC TECHNIQUES

Technique	Suitable for
Infrared Specular Reflectance (30-4000 cm^{-1}) 	glazes
Attenuated Total Reflectance (Diamond ATR, 525-4500 cm^{-1}) 	clays, glazes
FT-Raman (10-4500 cm^{-1})	glazes, fired clays
FT-NIR (Optical Fibers, 4000-12000 cm^{-1})	raw and low-fired clays, pigments

ACHIEVEMENTS

- Development of spectroscopic tools for estimating the composition of ceramic bodies and the firing conditions employed by ancient ceramists
- Fast and accurate identification of authentic post-firing decorations of ancient ceramics
- Spectroscopic evaluation of lead-safe formulations established as glaze materials for Iznik type ceramics
- Dissemination of knowledge: www.cera-med.net, a site hosted, maintained and updated by NHRF – Selected information is available to open public

**REPRESENTATIVE RESULTS****Estimation of the composition of ceramic bodies and of firing conditions employed by ancient ceramists****ATR spectral analysis of clay slips with different granularity****Identification of authentic post-firing decorations of ancient ceramics****Lead-safe formulations for Iznik type ceramics****PEOPLE INVOLVED**

Researchers: E.I. Kamitsos (eikam@eie.gr), G.D. Chryssikos, V. Gionis, C.P. Varsamis, Y. Meimaris
Students: M. Gkika, E. Ioannou
Technical: M. Korozi, A. Vossou