

Chemistry of Cultural Heritage

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The investigation in material science of Cultural Heritage Artefacts are mainly devoted to the study of inorganic materials (glass, ceramics and metals) by using non-conventional spectroscopic techniques, as X-rays photoelectron spectroscopy (XPS) and Mössbauer spectroscopy. By using these facilities, we investigate about technology processes and alteration phenomena in various cultural heritage materials since the beginning of the '90.

Recently the group has worked in Cappella degli Scrovegni in Padua, in the San Marco church mosaics and in the artistic glasses of San Giovanni e Paolo churches in Venice. Nowadays the equipment provided to Cultural Heritage Research group are: portable LIBS (Laser Induced Breakdown Spectroscopy); portable micro-XRF (X-Ray Fluorescence); ^{57}Fe Mössbauer spectroscopy operating in transmission (micro-invasive) and reflection (micro-invasive, non-invasive mode); XPS (X-ray Photoelectron Spectroscopy); AFM (Atomic Force Microscopy); FEG-ESEM equipped with detector for EDS analyses; optical microscopy; climatic chamber. Also accessible to the group Raman, IR, UV- Vis spectroscopies together with SIMS (Secondary Ion Mass Spectrometry) and in collaboration with Louvre museum laboratories we have access to IBA (Ion Beam Analyses) techniques. Moreover, the group has reached an optimum research experience in projecting and synthesizing silica based coating for glass, ceramic and metallic substrates.

- *Photoelectrochemical Behavior of Electrophoretically Deposited Hematite Thin Films Modified with Ti(IV)*, *Molecules*, **2016**, 21, 942.
- *Potash - lime - silica glass: protection from weathering*, *Herit. Sci.*, **2015**, 3, 22.
- *Sol-gel silica coating for potash-lime-silica stained glass: Applicability and protective effect*, *Journal of Non-Crystalline Solids*, **2014**, 390, 45–50.
- *Non-invasive multitechnique methodology applied to the study of two 14th century canvases by Lorenzo Veneziano*, *Journal of Cultural Heritage* 14S, **2013**, e153–e160.