

Final scientific report on the activities carried out on the CNR STM 2016 at SDU, Odense, DK

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My visit at CHART (Cultural Heritage and Archaeometric Research Team), in Odense Denmark, took place from 23th May 2016 to 11th June 2016.

The research activity was carried on in the frame of a collaboration already undergone, during a previous STM, between ICVBC-CNR and University of Southern Denmark (SDU). The main aim of the research was to implement an analytical approach to obtain quantitative data, using handheld XRF and LA-ICP-MS, to characterize the composition of historical porcelain and glasses.

A preliminary micro-XRF (portable X ray fluorescence) calibration was performed by means of certified standards (NIST standard for glasses) that I bring with me from Florence. The built calibration was used to correlate the intensity of the signal detected from the samples by means of LA-ICP-MS (laser ablation-inductively coupled plasma-mass spectrometry). Through this technique it is indeed possible to identify the elemental quantitative composition of a sample, observing the spatial distribution of trace elements in depth. The instrument is equipped with a spatial resolution of 10 μm , allowing a detailed study of any compositional inhomogeneity caused by the production process.

During my stay in the CHART labs, several samples have been analyzed and the analytical approach has been tested on real samples, raw and embedded in resin for the polished cross section. In particular, a sample of a XVIII century porcelain has been examined to extract the composition and to define the manufacture and the period of production.

Some micro-samples of stained glass windows from Santa Croce Church, by Maestro da Figline have been also studied. Moreover, measurements were performed on a peculiar historical glass sample's cross sections, showing a complex stratigraphy, highlighting an extraordinary technology in the 14th Century.

Before my departure, I collect several spectra that I have to analyze and elaborate. The collaboration is still ongoing since we would like to publish results acquired during my stay.