

## **THE COLOURS OF THE “COPTIC” TEXTILES AT THE MUSEO EGIZIO DI TORINO**

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The “Coptic” textile collection of the Museo Egizio di Torino consists of about 250 textiles. Many of them are fragments of coloured decorations and the information related to age and specific provenance is partially or totally missing. The whole collection has been subjected to a systematic multidisciplinary scientific investigation. Dyes were also investigated to complement the set of technological information available for each textile. Different analytical approaches were employed in order to reach different levels of information on the dyes and on dyeing techniques.

A preliminary non-invasive screening by fibre optics diffuse reflectance spectroscopy and portable fluorimetry was performed, and enabled the clustering of the textiles according to red and purple dyes (dyes from scale insects, from madder root or from sea snails were employed).

High performance liquid chromatography couple with diode array and mass spectrometry was then employed for selected textiles to go deeper into the dyeing materials, and enabled the detection of lac dye as the scale insect dye and of weld as the yellow colouring material.

The combined contribution of the non-invasive and micro-invasive analytical investigations revealed a peculiar dyeing procedure, where madder and lac dye were employed to obtain the final colour. Moreover, the whole set of analytical data was compared with dyeing materials found in other “Coptic” textiles dated with radiometric techniques, in order to possibly link the dyes with specific periods of production.

As a further aspect, a micro-invasive procedure by non-extractive surface enhanced Raman spectroscopy on silver colloidal pastes was set up on reference samples and then successfully applied for detecting weld in fibres sampled from the Coptic textiles.