



THE *PAINTED CROSS* BY NICOLA DI ULISSE OF SIENA

The Cabinet of Scientific Research applied to the Cultural Heritage of the Vatican Museums, prior to the restoration work, carried out a series of investigations aimed at the structural study of the work and the identification of the constituent materials, whether original or applied in previous restoration works.

One of the key aspects was to document, not only from a photographic point of view, the enormous structural damage that the work had suffered as a consequence of the earthquake. For this reason, it was decided to carry out a 3D scan of the work as it arrived at our Laboratories. The mathematical mode highlights the fragmentation and deformations. The missing parts, which were destroyed under the rubble, are also evident.

A very detailed and precise study was carried out on the paint film. The analyses made it possible to define all the constituent layers: from the preparation to the outer surface. The stratigraphic sections revealed a very interesting and complex paint film. Of particular note is the identification of an organic blue dye of the indigo type. This can also be identified thanks to the false-colour infrared images taken on the section. Indigo is present below the surface layer of azurite, a copper-based mineral pigment. The same sections were also observed and analysed using SEM scanning electron microscopy and EDS. Non-original materials were also identified, such as modern pigments and synthetic adhesives used in previous restoration works. It is easy to understand how knowledge of all the materials present is also a fundamental aspect for the exact restoration protocol.