

Spectroscopic and thermographic surveys in the church of S. Maria delle Palate di Tusa (ME)

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The church of S. Maria delle Palate is located on a hill overlooking the coast, in the municipality of Tusa, in the province of Messina, within the archaeological area of the ancient Halaesa Arconidea, a city founded in 403 BC and abandoned around the tenth century AD.

The building, whose original phase could date back to the Byzantine period, is mentioned for the first time in a document dated 1123 with the title of Sancta Maria, which later became the Sancta Maria de Palatio (or in the vulgar form S. Maria de li Palazzi), toponym that will indicate over time the entire area in which the remains of the ancient city are preserved.

The structure visible nowadays is the result of a rebuilding, on the remains of the Norman church, dated to 1551 and of two successive consolidations occurred one between 1734 and 1753, under the bishop Giacomo Bonanno, and the other in 1978, made by the Genio Civile of Messina.

Inside the church there is a wall painting, probably representing St. Francis in the act of receiving the stigmata, on which thermographic investigations were carried out aimed to identifying possible thermal anomalies and degradation processes in progress. We used a FLIR-EX system for thermographic analysis, it is a compact portable camera with an acquiring range from -20 to 500 °C. In Fig. 1 we report an ...

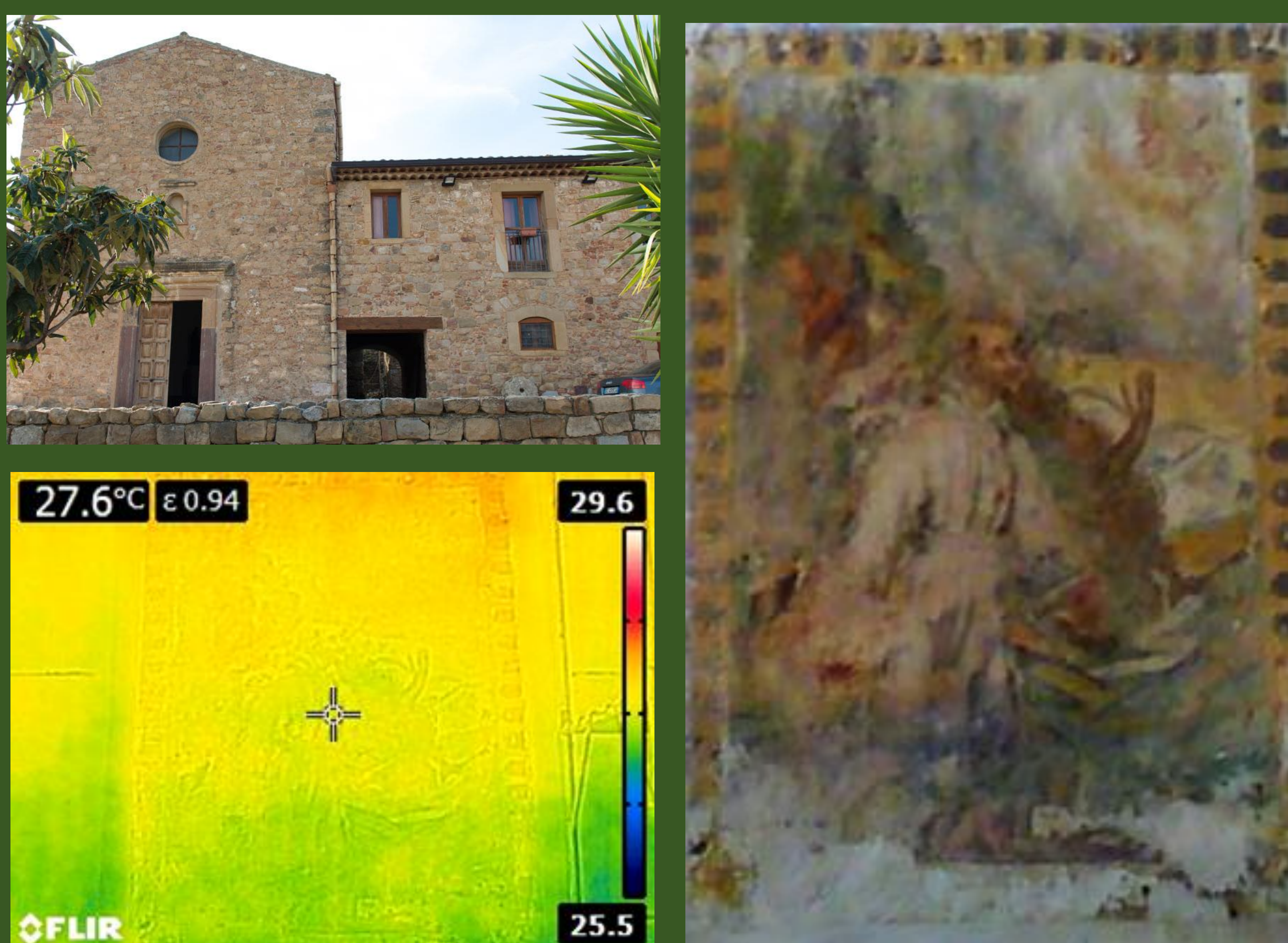


Fig.1 Thermographic image of the painting.

Moreover, a combination of non-invasive analysis by using handheld spectroscopic instrumentations (XRF and Raman Spectrometers) was applied in order to characterize the pigments and binders used for the realization of the painting. XRF spectra were acquired by using a Tracer III SD Bruker AXS instrument, and data have been analysed by using the software ARTAX 7. All the Raman spectra were acquired with the latest generation of Bruker Bravo handheld instrument equipped with Duo-Laser system. In Fig. 2 we report the Raman spectra acquired on red and yellow points. Yellow pigment shows bands at 414, 494 and 620 cm^{-1} imputable to goethite, at 670, 1008 and 1034 cm^{-1} to gypsum; 712 and 1086 cm^{-1} to calcite. This result is consistent with the analysis of the XRF spectra. Iron has been identified in the red area is ascribable to hematite and is consistent with raman bands at 414, 494 and 610 cm^{-1} .

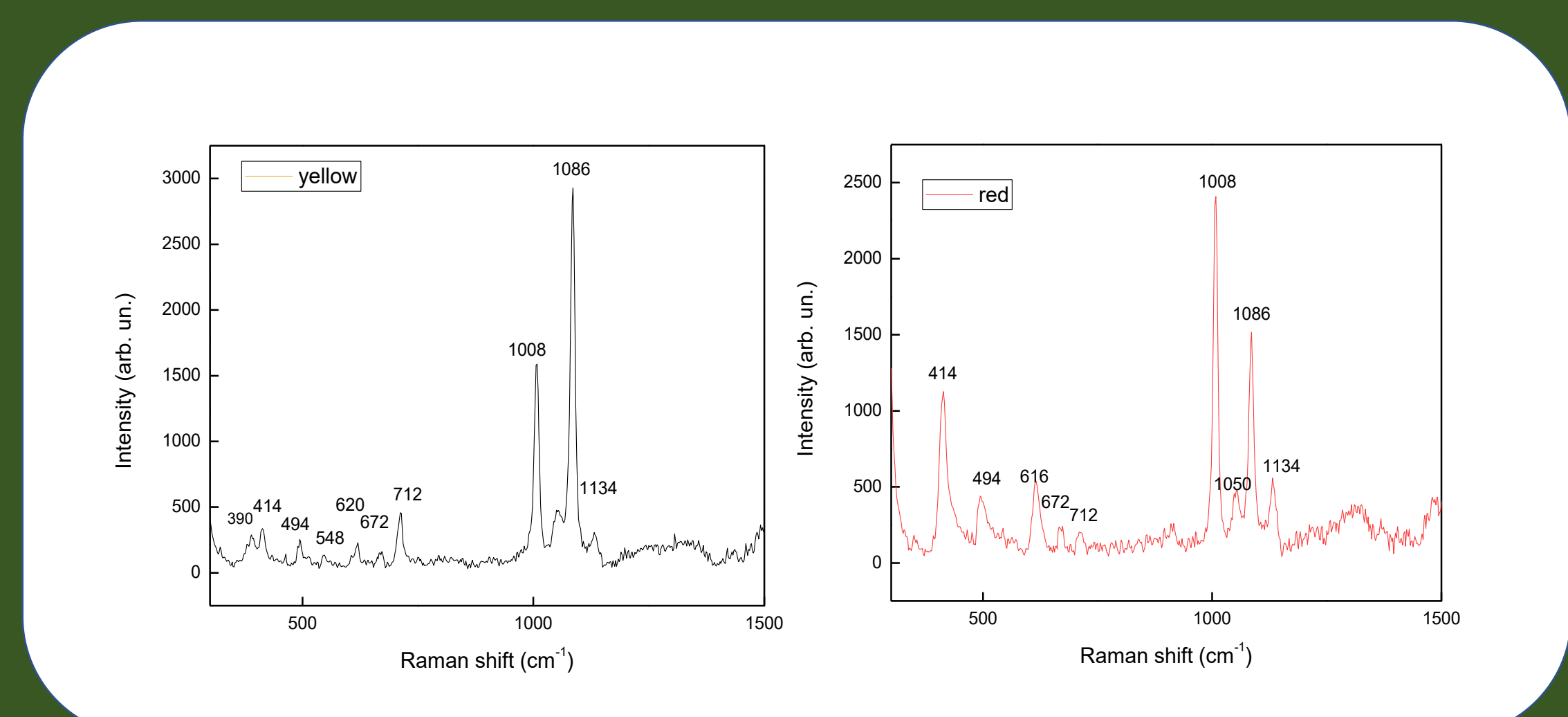


Fig.2 Raman spectra of red and yellow pigment

References

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