Katja Kavkler
Institute for the Protection of Cultural Heritage of Slovenia
katja.kavkler@zvkds.si

Irena Kralj Cigić
University of Ljubljana, Faculty of Chemistry and Chemical Technology

Analyses Reveal a Rare Wall-Painting Technique on an Ancient Building in Celje

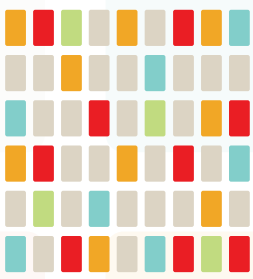
In 2018, an ancient building containing thousands of fragments of wall paintings was discovered under the Muzejski trg in Celje. Since then, the paintings have been conserved (some of the walls are in situ, while the ceiling is in the IPCH Restoration Centre). As part of the regular process, samples of the paintings were taken to analyse the materials. Particular attention was paid to the painting technique and the possible use of organic binders, as the surface of the paintings appeared unusual to the trained eye: the background was smooth and shiny, while the figures and ornaments were painted in relief over the surface and had a matt appearance.

Cross-sections of the paint layers showed that the background paint had penetrated the intonaco plaster layers, indicating that the surface plaster layer was still wet when the background paint was applied. Other paint layers were applied to the previously dried background, indicating the use of the secco painting technique. Therefore, particular attention was paid to the possible presence of an organic binder. Initial analyses were carried out using FTIR spectroscopy, which identified the carbonyl band in the bulk samples. Further analyses of extracted samples and cotton swabs from surface cleaning tests revealed spectra similar to beeswax, as well as features typical of free fatty acids.

As the FTIR results are not selective, GC-MS was used to identify the paint binder in more details. The results confirmed the presence of fatty acids and long-chain organic compounds typical of both linseed oil and beeswax, suggesting a mixture of both as binders. This confirmed that the antique wall paintings from the ancient building from Muzejski trg in Celje were painted using the encaustic technique.

3rd Annual Conference of the Slovenian Node of the European Research Infrastructure for Heritage Science

E-RIHS Slovenia
Koper, 18–19 November 2025



https://doi.org/10.26493/978-961-293-546-7.29