

SUPPLEMENTARY MATERIAL

Application of Microemulsions for the Removal of Synthetic Resins from Paintings on Canvas

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Abstract - Traditional cleaning methods with organic solvents often are not suitable for removal of aged resin so researchers have to find new formulations. In this work a case study is reported in which new microemulsions were applied on the surface of a painting covered by some aged resin layers used during a previous restoration. Basing on the quality of the intervention and the analysis of a sample of the varnish carried out with either MALDI-TOF and ATR-IR spectrometers, it was conjectured that this undesired material could be an acrylic polymer. So it was chosen to use xylene, ethyl acetate and propylene carbonate (XYL and EAPC) microemulsions (O/W oil in water). The first is able to solubilize only acrylic polymers, the second may solve both acrylic and vinyl resins. The first has had the greatest effect allowing complete varnish removal and original artwork restoration.

Keywords: Microemulsions, MALDI-TOF, ATR-IR, cleaning methods

Table S1: Composition of the XYL microemulsion

Composition	Role	Concentration (wt%)
SDS	Surfactant	4.1
Water	Continuous phase	85.4
1-pentanol	Co-surfactant	7.9
p-xylene	Dispersed phase	2.6

Table S2: Composition of EAPC microemulsion

Composition	Role	Concentration (wt%)
SDS	Surfactant	3.7
Water	Continuous phase	73.3
1-pentanol	Co-surfactant	7.0
Propylene carbonate	Dispersed phase	8.0
Ethyl acetate	Co-solvent	8.0

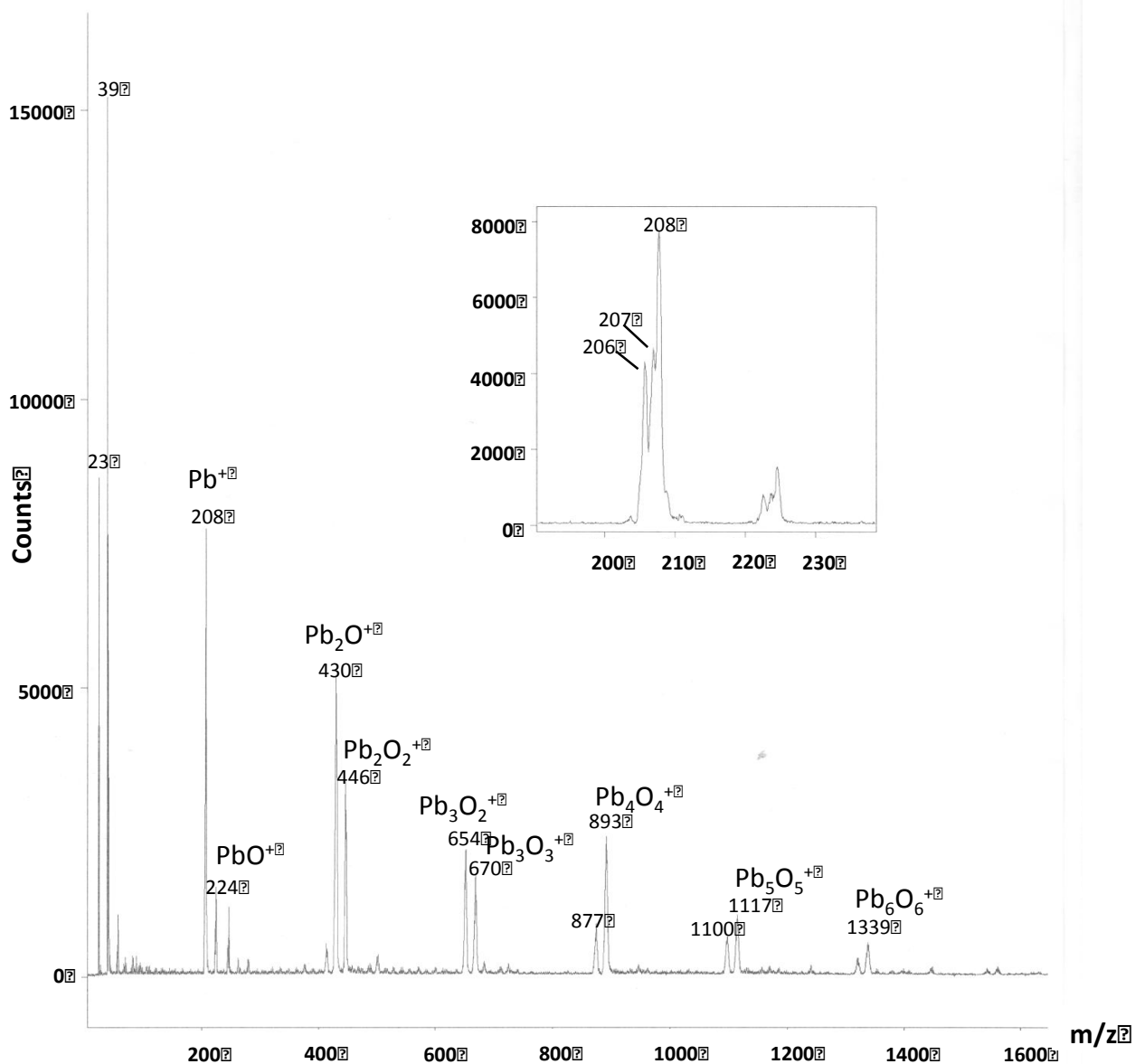


Figure. S1: MALDI-TOF spectrum obtained by directly analysing the solid sample with the laser source without using matrix solutions.

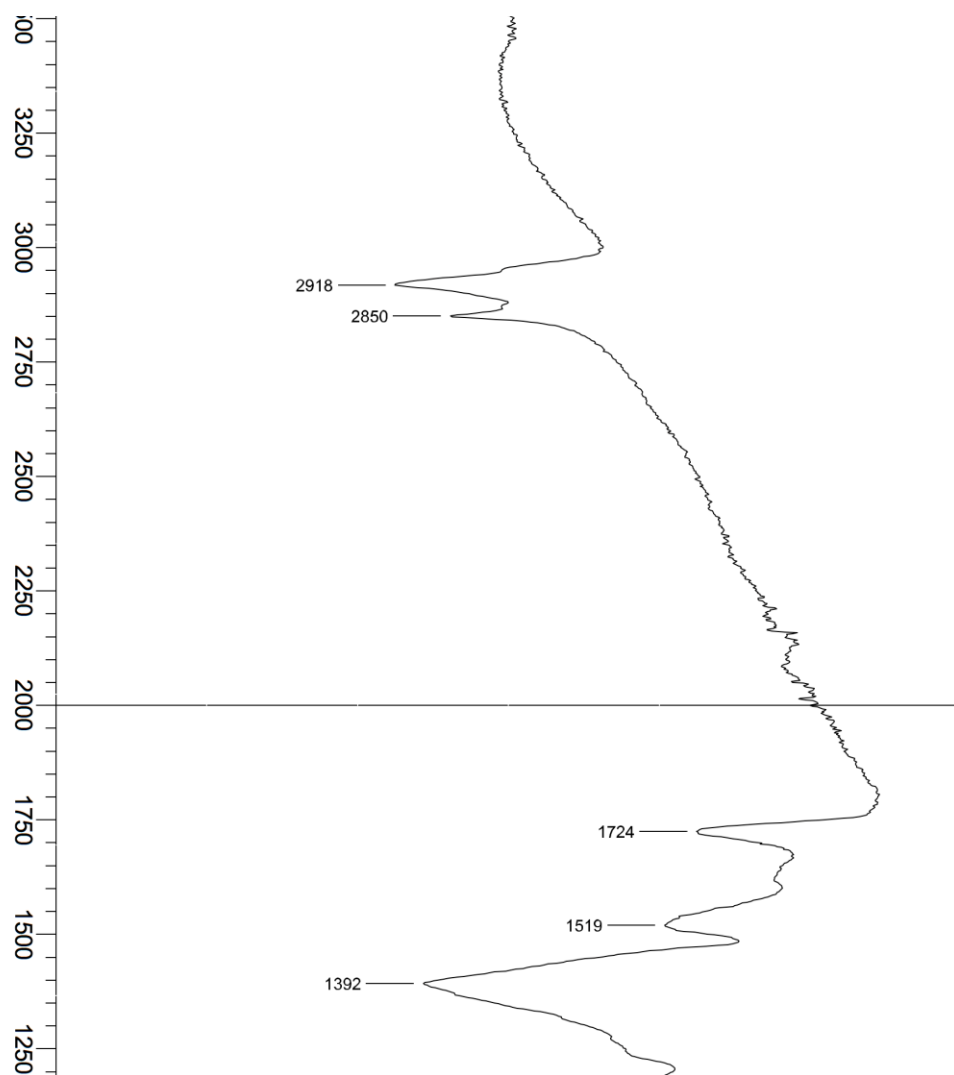


Figure. S2: ATR-IR spectrum obtained on powdered sample in the range 500-4000 cm^{-1} .