ABSTRACT

In the conservation of oil paintings constructed according to traditional painting practices, the uppermost layer of varnish is often removed when discoloured to a degree that obscures the image underneath. To remove the varnish without causing any observable damage to the underlying oil paint, organic solvents have been used via a well-established and systemic approach for selecting and optimising the single solvent or mixture of solvents. However, due to hazards associated with organic solvents, to the underlying oil paint layers, the practitioner, and the environment, an extensive number of water-based methods have been developed and introduced to the field since the 1990s. The current challenge is to select, modify and evaluate a method for a specific varnish removal scenario among the multitude of options available. To facilitate this decision-making process, promising water-based methods for varnish removal were identified, and their modifiability and comparative advantages and disadvantages were evaluated, also in relation to a typical organic solvent-based approach. Furthermore, as these aims were primarily accomplished via the use of mock-up samples, the transferability of the mock-up-based results to expected outcomes in conservation practice was also evaluated. The key outcomes of this work were the identification of a new type of cleaning system for varnish removal, surfactant-free oil-in-water (OiW) microemulsions (Paper I), the development of a framework for comparative evaluation of methods for varnish removal (Paper II), and the development of a methodology for preparing mock-up samples for research on the removal of coatings from paintings and for evaluating results obtained via mock-up samples (Paper III).

DANSK RESUMÉ

I konserveringen af oliemalerier fremstillet efter traditionelle maleteknikker, fjernes ofte det øverste lag fernis, hvis det er misfarvet til en grad der nedsætter læsbarheden af det underliggende maleri. For at fjerne fernis bruges typisk organiske opløsningsmidler ud fra en veletablerede og metodisk fremgang for udvælgelsen og optimeringen af det organiske opløsningsmiddel eller en blanding af organiske opløsningsmidler. Som konsekvens af de risici forbundet med organiske opløsningsmidler, for underliggende farvelag, brugeren, og miljøet, er en række vandbaserede metoder blevet udviklet og introduceret til faget siden 1990erne. For at gøre denne beslutningsproces mere overskuelig, er lovende vandbaserede metoder til fernisfjernelse blevet identificeret og vurderet i forhold til deres justerbarhed og komparative fordele og ulemper, også i forhold til en typisk fremgang med et organisk opløsningsmiddel. Eftersom disse projektformål blev udført via mock-up prøver, indebar projektet også vurderinger af overførligheden af resultaterne fra mock-up prøverne til forventede resultater i konservering. Hovedresultater bestod af identificeringen af en ny type rensningssystem til fernis fjernelse, olie-i-vand-mikroemulsioner uden surfaktanter (Artikel I), udviklingen af en fremgangsmetode til komparativ vurdering af metoder til fernisfjernelse (Artikel II), samt udviklingen af en metodik for fremstilling af mock-up prøver til forskning indenfor fernisfjernelse i konservering og for vurdering af resultater udledt fra mock-up prøver (Artikel III).