

Presentation Abstracts

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Binders used in metallic paints investigated by micro-FTIR and synchrotron-sourced FTIR mapping

Full presentation

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Metallic paints are made from flakes of copper, brass or aluminium suspended in a quick drying transparent medium. The primary use for metallic paints was for decoration, craftwork, sign-writing and coach-painting. A number of paintings by Australian artists dating from the late nineteenth to the first half of the twentieth century have been identified as making use of brass, copper or aluminium paints alongside standard oil paints. The appearance of metallic paint films on the paintings varies from dull and roughly textured, to smooth, even surfaces with high reflectance. The light scattering and reflection effects are enhanced by the alignment of the metal flakes within the paint film and this is determined by the type of binder, the manufacturing technique of the metal flakes and the method of application of the paint.

This paper investigates the binders found in several historic cans of metallic paints and in a collection of German and Australian-made metallic paint kits from an artist's box dating from the 1930s. Samples of the liquids inside these cans and bottles were identified with micro-FTIR. Samples taken from a number of paintings incorporating metallic paints were examined with Scanning Electron Microscopy (SEM) with Energy Dispersive Spectroscopy (EDS) to identify the metal types and to visualise the aligning characteristics of the flakes. Analysis of the binders in dried paint samples from artworks is challenged by the opacity of the metallic flakes preventing conventional transmission FTIR. In these samples FTIR of thin-sections cut from cross-sections allowed for transmission of the binder layer with the high resolution of the synchrotron-sourced infrared beam. FTIR mapping of these samples in 5 micron step sizes also revealed phase separation of the mixed components within the binder layer.

Paula Dredge is the Head of Painting Conservation at the Art Gallery of New South Wales. She completed her PhD at the University of Melbourne, Centre for Cultural Materials Conservation, now the Grimwade Centre, on the subject of the artist Sidney Nolan's use of house paints, in particular Ripolin paint in the 1940s. Since completing this thesis she has continued to investigate the use of FTIR to examine modern paints.