MICRO-STRUCTURAL CHARACTERISATION OF NON-EASEL PAINTED ARTWORKS

By

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CERTIFICATE OF AUTHORSHIP AND ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of the requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all the information sources and literature used are indicated in the thesis.

Lynn Chua

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PUBLICATIONS AND CONFERENCE PRESENTATIONS

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Chua, L., Maynard-Casely, H.E., Thomas, P.S., Head, K. & Stuart, B.H. 2016, 'Characterisation of blue pigments from ceremonial objects of the Southern Highlands in Papua New Guinea using vibrational spectroscopy and X-ray diffraction', *Vibrational Spectroscopy*, vol. 85, pp. 43-7.

Chua, L. Hoeval, C., Smith, G.D. 2016, 'Characterization of Haku Maki Prints from the "Poem" Series using Light-Based Techniques', *Heritage Science,* vol. 4, no. 1.

Pending

Chua, L. Head, K. Thomas, P. & Stuart, B., 'Raman and FTIR Microscopy of organic binders and extraneous organic materials on painted ceremonial objects from the Highlands of Papua New Guinea', *Microchemical Journal*

Chua, L., McCoy R., Siegel, J., Smith, G.D. 'Polyurethane enamel paint characterization in Robert Indiana "*Numbers 0-9*" outdoor sculpture: Comparison of Paint failure before and after Conservation', *Studies in Conservation*

Conference Presentations

Chua, L., Head, K., Thomas, P. & Stuart, B. (2015, April). *Investigation of paints on ceremonial objects from the Highlands of Papua New Guinea*. Paper presented at the TECHNART Conference, Catania, Italy

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Abstract

Artist paint is one of the most heterogeneous materials encountered in museum conservation. While many scientific studies have been carried out on European easel paintings, less work has focused on other painted artworks, as well as works from other geographic regions. This thesis compiles results from four technical analysis projects on different types of non-easel painted artworks at the Indianapolis Museum of Art (IMA) and the Art Gallery of New South Wales (AGNSW), applying micro-analytical techniques, including FTIR microscopy, Raman microscopy, SEM-EDS, micro-XRF, XRD, Py-GC/MS, GC/MS and MFT. The painted artworks include 20th century ethnographic collections from the Highlands of Papua New Guinea, inked prints from the "Poem series" by Japanese artist Haku Maki, Robert Indiana's painted aluminum outdoor sculptures, and Gustave Baumann's home-made paint on paper. These works have not been previously investigated scientifically, and each presents specific museum curatorial and conservation concerns such as technical art history, lightfastness, paint degradation and treatment considerations. A range of natural and synthetic pigments, paint binders and deterioration products were characterized, contributing to the technical art history and understanding of paint degradation that informs conservation practices.