Bibliography of Research at MCI on Artists' Paints and Paintings

Almost every museum has paintings in its collections. The preservation of these paintings is a prime consideration for museums and research into the factors that affect the longevity of paintings is an on-going process. At MCI research has been conducted for decades on the effects of environment, transportation and conservation treatments of paintings. While traditional European art techniques have focused primarily on the use of oil paints, other types of paints utilized a variety of media including egg tempera, alkyds, cellulose nitrate and butyrate, and acrylics. Modern media have also complicated the issues surrounding the preservation of paintings.

The following list of publications gives some idea of the wide ranging research at MCI into this complicated area of research.

Publications:

Tumosa, C. S. and M. F. Mecklenburg, "Weight Changes in Acrylic Emulsion Paints and the Implications for Accelerated Ageing", *WAAC Newsletter* 25(3):12-14 (2003).

Tumosa, C. S. and M. F. Mecklenburg, "Weight Changes on Oxidation of Drying and Semi-drying Oils", *Collection Forum* 18(1-2):116-123 (2003).

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Erhardt, D., Tumosa, C. S. and M. F. Mecklenburg, "Can Artists' Oil Paints Be Accelerated Aged?", *Polymer Preprints* 41(2):1790-1791 (2000).

Erhardt, D., Tumosa, C. S. and M. F. Mecklenburg, "Natural and Accelerated Thermal Aging of Oil Paint Films", *ICOM Preprints*, Melbourne Congress 64-69 (2000).

Tumosa, C. S., Millard, J., Erhardt, D. and M. F. Mecklenburg, "Effects of solvents on the physical properties of paint films", 12th Triennial Meeting, Lyon, *ICOM Preprints* Vol. I 347-352. (1999).

Tumosa, C. S. and M. F. Mecklenburg, "Materials Characterization and the Computer Modeling of Works of Art", Abstracts *Pittcon 99*, [abstract] 858 (1999).

Mecklenburg, M. F. and C. S. Tumosa, "Temperature and Relative Humidity Effects on the Mechanical and Chemical Stability of Collections", *ASHRAE Journal* 41(4):77-82 (1999).

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Murray. A., Mecklenburg, M. F., Fortenko, C. M. and R. E. Green, "Air-Coupled Ultrasonic System: A New Technology for Detecting Subsurface Flaws in Painting on Wooden Panels", *JAIC* 35:145-162 (1996).

Erhardt, D., M. F. Mecklenburg, C. S. Tumosa and M. McCormick-Goodhart, "The Determination of Allowable RH Fluctuations", *WAAC Newsletter* 17(1): 19-23 (1995).

Mecklenburg, M. F. and C. S. Tumosa, "Mechanics Research of NASM Materials and Environmental Effects on their Properties, Interim Report #1". Report for National Air and Space Museum (1994).

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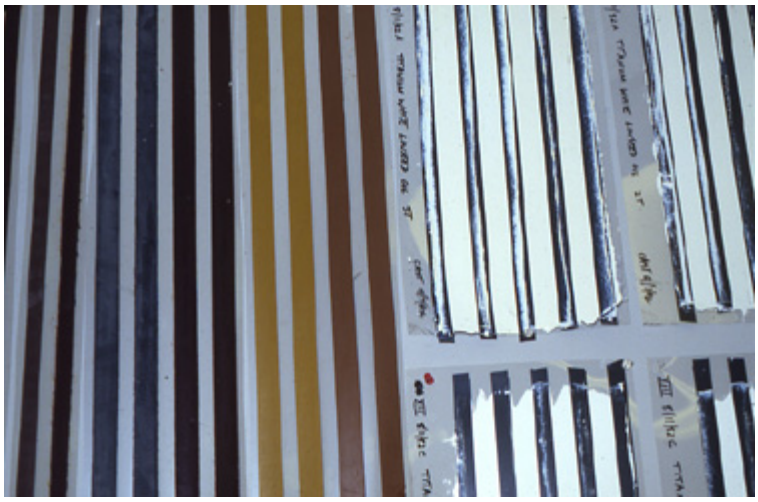

Figure 1 shows strips of 30 year old oil paints cast onto polyester films. The paint can be removed from the film and tested for chemical behavior or for physical properties.

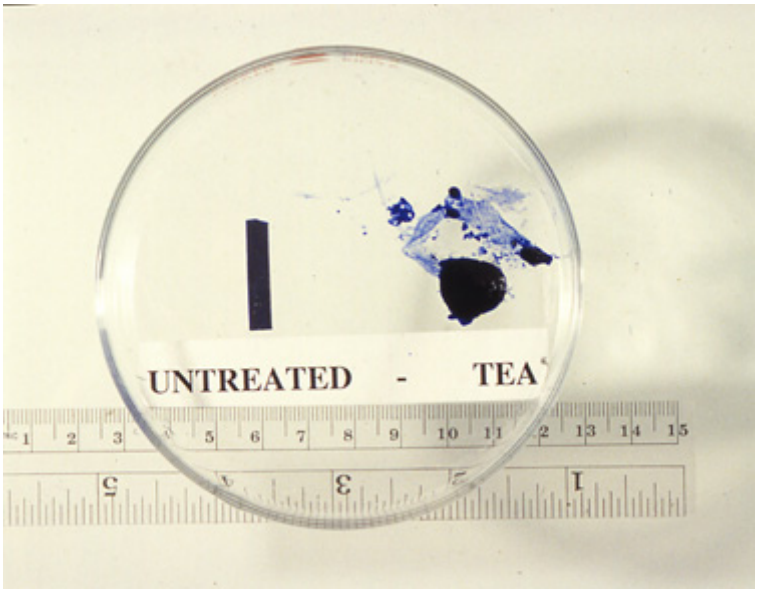

Figure 2 shows the effect of an aggressive solvent on a paint film. While initially intact the oil paint slowly decomposes under the influence of the non-volatile solvent. Proper solvents for cleaning are very important areas of research.