

# Cleaning of Acrylic Painted Surfaces

Washington DC, April 30 – May 3, 2013

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## SESSION TITLE

**Recent research into cleaning: Control of swelling**

## INSTRUCTOR

**Richard Wolbers, University of Delaware**

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## SESSION OUTLINE

### ABSTRACT

Additional current research into acrylic paint swelling and extraction under a variety of aqueous conditions will be presented. The results suggest that by managing simple aqueous parameters such as pH, conductivity, and specific ions in solution, that swelling and extraction can be limited in these kinds of paints. Additional methods of applying water-based preparations will be discussed, concentrating on micro emulsion preparation and use, to further limit the impact of water-based systems on these kinds of paints, while increasing efficacy.

### OBJECTIVES

To link ideas introduced in earlier sessions to current research and to present current research results. The goal of this session is to also bring the current research results 'back to the bench' in terms of incorporating the ideas presented into studio practice.

### CONTENT OUTLINE

Experimental methods and materials used for swelling/extraction experiments. Sample selection and preparation. Results for GAC 1400 Ultramarine Blue (PB29). Results for GAC 1120 Cadmium Yellow (PY35). Additional specific colour data. Summary of OPEP(30) extraction data. Summary of OPEO (20-40) extraction data. Oxidation/degradation pathways for OPEOs. Hofmeister effects. Cloud point (T<sub>cp</sub>) depression in non-ionic surfactants. Cloud point depression experimental results. Future experiments (DESI). Micro emulsion review. Sample micro emulsion preparations. Introduction to afternoon studio practicum.

### METHODOLOGY


Mixed Lecture and studio or 'hands on' work. The session will begin with a 40 minute PowerPoint review of current research results with the emphasis on application to cleaning acrylic paint surfaces. The lecture will be followed by a practical (2 hour) session in which the participants will construct a series of variations on a specific micro emulsion recipe, and then test clean pre-soiled samples. The end of the practical session will be followed by a group discussion of results (30 minutes).



## SESSION OUTLINE CONT'D.

### BIBLIOGRAPHY


Monzer, Fanun. (2008). *Microemulsions: Properties and Applications*, Surfactant Science Series, Vol. 144, CRC Press, NY


 Dillon, C.E., A.F. Lagalante and R.C. Wolbers, "Aqueous cleaning of acrylic emulsion paint films. The effect of solution pH, conductivity and ionic strength on film swelling and surfactant removal" *Studies in Conservation* (2013) in press.

### PRODUCT INFORMATION

 Clearco Cyclo-2345 (d5/d6) Cyclomethicone product information:

[www.clearcoproducts.com/pdf/cosmetic/np-cyclo-2345.pdf](http://www.clearcoproducts.com/pdf/cosmetic/np-cyclo-2345.pdf)

 [www.google.com/search?q=Cyclomethicone+Solvents+bibliography&hl=en&prmd=imvns&ei=cgG1T6bcMcvfggesyaES&start=30&sa=N&biw=1246&bih=494](http://www.google.com/search?q=Cyclomethicone+Solvents+bibliography&hl=en&prmd=imvns&ei=cgG1T6bcMcvfggesyaES&start=30&sa=N&biw=1246&bih=494)

 [www.scribd.com/doc/46606171/11/MICROEMULSIONS](http://www.scribd.com/doc/46606171/11/MICROEMULSIONS)

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 = Available online

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