



Cleaning of Acrylic Painted Surfaces

July 12 – 15, 2016

The John and Mable Ringling Museum of Art
Sarasota, Florida

SESSION TITLE: Chemistry of liquid cleaning

Practical Session 2: Controlling the Aqueous Environment

Lecture 3: Wet Cleaning: Aqueous systems and nonpolar organic solvent systems

INSTRUCTOR: Chris Stavroudis

ABSTRACT

The fundamentals of aqueous chemistry and solubility theory will be reviewed as simply as possible and with the greatest currency towards the cleaning of acrylic paint surfaces. Liquid cleaning in this context refers to both aqueous and non-aqueous cleaning systems and will be considered irrespective of application techniques.

OBJECTIVES

By contextualizing the chemical and empirical underpinnings of solubility and the interactions between molecules that can be exploited in a cleaning, we will have established a common vocabulary for the rest of the workshop.

- To familiarize participants with using pH and conductivity meters to measure surface pH as well as solution pH
- Participants will be broken into groups. Each group will calibrate pH and conductivity meters.
- Each group will mix pH adjusted water at various pH and conductivities.
- Each group will measure the pH and conductivity of a sample paint surface using an Agarose

CONTENT OUTLINE

Practical Session 2 (Tuesday afternoon)

- Calibrating pH meters (conventional and Horiba) and conductivity meters
- Reading pH and conductivity from sample paint surface with Agarose gel plugs
- Preparing pH adjusted water (controlling pH and conductivity)

Lecture 3 (Wednesday morning)

- Why clean Acrylic Paint Surfaces
- Aqueous chemistry
- The definition and importance of pH
- Buffering of pH
- Ionic strength and solution conductivity
- Isotonicity – diffusion and osmotic effects
- Measuring surface conductivity and pH
- Surfactant theory
- Chelating systems
- Cloud-point and the suppression of same
- Gelling agents
- Intermolecular forces and solubility
- Solubility parameters
- Hydrocarbon solvents
- Silicone solvents
- Application of principles to painted surfaces



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Session Outline cont'd.

METHODOLOGY

The practical session will allow participants to calibrate pH meters and mix appropriate pH- and conductivity-adjusted rinse solutions. The following morning the PowerPoint presentation will contextualize the practical and theoretical presentations from the previous day. These practical sessions are supported by online videos on GCI CAPS site (resource materials).



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