

Modular Cleaning Program Workshop

Lecturer: Chris Stavroudis

Assistant: Tiarna Doherty

Participants: c. 25

Learning Objectives:

By taking this course conservators will gain a solid foundation in the theory and practice of formulating aqueous cleaning solutions, solvent gels, and polymer-stabilized emulsions. Participants will receive information on cleaning and solvent theory through lectures and readings. They will also learn how the Modular Cleaning Program stock solutions and computer database assist in formulating effective cleaning strategies.

During lab time participants will prepare the stock solutions, become proficient with the MCP computer database and learn to use the MCP to fine tune the cleaning of test paintings. After preparing the stock solutions, conservators will combine the theoretical and practical by finding an optimal cleaning system for one or more test paintings. Similarly, the set of solvent gels and mixtures thereof as well as the polymer-based emulsions will be used to explore other cleaning problems on test paintings. Of critical importance, the participants will learn about clearance of non-volatile materials and the advantages and disadvantages of using cleaning systems that contain components that do not evaporate.

The aim of the workshop is to provide the participant with the tools to use the Modular Cleaning Program in their own practice as soon as they return to their own studios. After the workshop, participants should be comfortable mixing the solutions, working through aqueous and solvent gel test cleanings, and understand how various changes in materials will affect the cleaning solution and how this relates to the chemistry of the surface and cleaning system. Participants will leave the course with a complete set of the stock solutions which will include bottles of aqueous concentrate solutions and solvent gels (if the participant can transport the solvent gels safely).

The Modular Cleaning Program Workshop

Chris Stavroudis, Instructor

Day 1:

Introductions and Opening Remarks

Lecture

- Introduction to the Modular Cleaning Program and General lecture on aqueous chemistry

Discussion

Break

Lecture

- Modular Cleaning Program (MCP) Part I: Using the Database for aqueous cleaning

Discussion

Lunch

Lecture

- Clearance Issues in Cleaning with Aqueous Systems

Discussion

- Health and Safety in the lab
- Review use of pH meters, lab materials
- The use of carbonated water

Lab time

- Begin mixing aqueous stock solutions
- Focus on buffers, setting the pH of a chelator, preparing a surfactant solution; begin to build the master Concentrated Stock Solutions for participants' test sets.

Break

Lab time

- Continue mixing solutions
- Start making sodium deoxycholate stock solution (leave overnight)

Discussion

- Questions, compare notes

DAY 2:

Lecture

- Aqueous cleaning made more complicated, ionic strength
- Surface conductivity and pH measurements
- The MCP and cleaning acrylic paintings
- Customizing the MCP: designing your own aqueous cleaning sets

Break

Lab time

- Measuring pH and conductivity of paint surfaces

Discussion

Lab time

- Continue mixing solutions
- Measure surface pH and conductivity of sample paintings

Lunch

Discussion

- Further modifying aqueous cleaning systems
- “Resin soaps”, affinity surfactants and varnish removal
- Co-solvents, enzymes

Lab time

- Continue mixing solutions
- Begin test surface cleaning of sample paintings

Break

Lab time

- Continue mixing solutions
- Continue test surface cleaning of sample paintings
- Test clean paintings
- Use MCP to try to remove/reduce varnish layers and varnish residue left from previous cleanings

Discussion

- Present results of tests to group

DAY 3:

Lecture

- Solvents and the MCP
- Solubility parameters, solvent sets, and MCP interactive graphic display

Break

Lecture

- Azeotropes
- Solvent gels and the MCP
- Theory of gel formulation, dual neutralization calculator, amines, and incorporation of new recipes into MCP
- Clearance Issues in Cleaning with Solvent Gels

Lunch

Lab time

- Demonstrate mixing a low polarity solvent gel
- Begin making solvent gels for kits
- Continue mixing and testing of aqueous solutions

Break

Lab Time

- Demonstrate combining of solvent gels and the representation of the process in the MCP Database
- Continue making solvent gels for kits

DAY 4:

Lecture

- Pemulin and Velvesil polymer-stabilized emulsions
- More on cleaning acrylic surfaces.

Lab time

- Mix Pemulin gels and continue making solvent gels for kits.

Break

Lab time

- Test solvent gels and Pemulin based emulsions on test paintings
- Continue making solvent gels for kits.

Lunch

Lecture

- Customizing the MCP II: designing your own solvent gels and gel sets.

Lab time

- Begin to clean up studio
- Distribute solutions and gels, prepare for travel

Break

Lecture (Possibly open to additional people)

- Review of previous lecture material.

Discussion of cleaning tests performed during workshop.

- Questions and general discussion

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