

CATHERINE R. MATSEN

Conservation Department
Winterthur Museum, Garden and Library
Winterthur, DE 19735
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Education

University of Pennsylvania, Philadelphia, PA

August 2003

M.S. in Historic Preservation

Thesis: *The Corbit-Sharp House at Odessa, Delaware:
Paint Analysis and Interpretation of Four Interior Rooms*

Advisor: Frank G. Matero

Reader: Dr. Susan L. Buck

This research addresses the examination and analysis of original interior finishes of four rooms of the Corbit-Sharp House (1774) using cross-section microscopy, PLM, FTIR, GS-MS and SEM-EDS and color matching with a colorimeter. The results of these analytical methods form an almost complete picture of the original appearances of the four rooms and the materials used to create the painted decorations – specifically the pigments, glazes, additives, binders, and varnishes of these layers. Interpretation of the findings helped to define the eighteenth-century treatments as they relate to the functions and significance of the rooms and the deliberate choices made by builder William Corbit (1746-1818).

Bryn Mawr College, Bryn Mawr, PA

May 1997

A.B. in Chemistry

With coursework in art history, archaeology and studio art.

Work Experience

Scientist

January 2017 – present

Associate Scientist

October 2006 – December 2016

Assistant Scientist

August 2003 – October 2006

Winterthur Museum, Garden and Library, Winterthur, DE

Conservation Department

Current and future projects:

- [1] cross-section and organic materials analysis of 41 Chinese export lacquer objects; 14 objects from Winterthur Museum, 27 objects from other North American and European collections;
- [2] XRF mirror survey;
- [3] analysis of tarnish formation on aged-lacquered silver objects;
- [4] quantitative XRF analysis of silver wares;
- [5] research and analysis of coastal Connecticut and south-eastern Pennsylvania painted furniture;
- [6] architectural paint analysis of Winterthur Museum Period Rooms and Buildings;
- [7] research and analysis of Pennsylvania German fraktur.

Intern

June – August 2002

Colonial Williamsburg Foundation, Williamsburg, VA
Department of Architectural Research

Research projects:

- Shirley Plantation, Charles City, Virginia, paint analysis of interior and exterior paints.
- Stratford Hall, Stratford, Virginia, paint analysis of parlor.
- Colonial Williamsburg Architectural Fragments Collection, paint analysis.
- Esmont, Albermarle County Virginia, analysis of exterior painted brick.
- Hickory Hill, Hanover County Virginia, paint analysis of kitchen dependency.
- Designed preliminary database template for framing schedules and database of architectural terms thesaurus.

Intern

July – August 2001

Drayton Hall, Charleston, SC
Architectural Paint Conservation

The goal of this Paint Conservation Project was to preserve as much as the historic interior architectural paint as possible without changing the overall appearance. The objectives for the first phase of the project were three-fold; (1) applied cross section paint examination and instrumental analytical analysis as part of historic paint study, (2) assessed the condition and causes of paint deterioration through environmental monitoring, (3) conducted ultrasonic-mist consolidation test treatments for conservation of painted wood panels on site.

Analytical Laboratory Assistant

May 2000 – June 2001

Conservation Department
Winterthur Museum, Garden and Library, Winterthur, DE

- Performed instrumental analyses of art and architectural objects as requested by curators and conservators with the instrumental techniques of FTIR, GC-MS, XRF, and SEM-EDAX.
- Major projects: Craftsman Farms, Gustav Stickley Home, analysis of surfaces finishes with XRF, FTIR, and SEM-EDAX; Winterthur Museum, Federal Parlor, analysis of wallpaper with XRF and FTIR.

Research Technician

November 1997 – May 2000

Du Pont Pharmaceuticals Company, Wilmington, DE

- Carried out multi-step synthesis of compound for drug discovery.
- Scaled up synthesis of drug candidate.

E.I. du Pont de Nemours, Wilmington, DE

- Optimized conditions for hydrocyanation technology by studying the effects of reaction conditions.
- Synthesized and characterized new ligands for homogeneous transition metal catalysts.
- Performed combinatorial synthesis of luminescent compounds using automated synthesizer.

Laboratory Technician

July – August 1995

Materials and Research Lab, Delaware Department of Transportation, Dover, DE

- Performed analytical chemical tests on cement samples by spectrophotometric methods.

Academic Affiliations

Affiliated Associate Professor

December 2018 - present

Affiliated Assistant Professor

August 2003 – November 2018

University of Delaware Art Conservation Department

Courses Taught (Winterthur/University of Delaware Program in Art Conservation)

ARTC672/673 Advanced Analytical Techniques: The application of instrumental methods of analysis to art conservation. Topics covered: analytical approach, x-ray fluorescence spectroscopy, ultraviolet-visible spectroscopy laboratory, thin layer chromatography. Second year conservation science research projects supervised in ARTC673.

Conservation Science Teaching Assistant

August 2002 – May 2003

Graduate Program in Historic Preservation

University of Pennsylvania, Philadelphia, PA

- Prepared and managed weekly laboratory sessions for introductory and advanced conservation science courses.

Science Assistant

August – November 1997

St. Andrew's School, Middletown, DE

- Organized student laboratory exercises for chemistry, physics, and biology courses.

Student Researcher

September 1996 – May 1997

Bryn Mawr College, Bryn Mawr, PA

- Actively worked in research laboratory studying aspects of molybdenum enzyme chemistry.
- Executed synthesis and product analysis.
- Research Topic: Synthesis and Characterization of a Tris-dithiolene Molybdenum Complex

General Chemistry Teaching Assistant

September 1996 – May 1997

Bryn Mawr College, Bryn Mawr, PA

- Supervised students during weekly general chemistry lab, graded reports, and held weekly office hours.

Intern June – August 1996

Emerson Center for Scientific Computation

Emory University, Atlanta, GA

- Contributed to advisor's research by creating computer programs which calculated structural parameters of molecules.
- Research Topic: Osmium-Catalyzed Asymmetric Dihydroxylation of Olefins

Publications

M.J. Petisca and **C. Matsen**. "Lisbon as seen from China – Conundrums of a set of lacquered nesting tables," *Studies in Conservation*, (expected 2019).

Matsen, C, M.J. Petisca, and S. Auffret. "When science reveals craft practices: Recent findings in the py-GC/MS analysis of Chinese export lacquer" In *ICOM-CC 18th Triennial Conference Preprints*, edited by Janet Bridgland (2017).

Petisca, M.J., S. Auffret, **C. Matsen**, W.C. Petersen, J. Mass, and M. Anderson, "A hint of Orient in an Americana collection: Investigations into Chinese export furniture at Winterthur Museum," *Studies in Conservation*, 61 (2016): S.3, S85-90.

Pouliot, B., **C. Matsen**, J. Mass, W. Donnelly, K. Andrews, and M. Bearden, "Three decades later: A status report on the silver lacquering program at Winterthur," *The American Institute for Conservation of Historic & Artistic Works Objects Specialty Group Postprints, Volume Twenty* (2015): 32-48

Travers-Moffitt, K. and **C. Matsen**. “Identification of zinc-based paints in cross-section using autofluorescence, SEM-EDS elemental mapping, and TSQ fluorochrome stain.” In *Standards in Architectural Paint Research*, edited by Lisa Nilsen and Kathrin Hinrichs Degerbald, 41-49. London: Archetype Publications, 2014.

Auffret, S., **C. Matsen** and M.J. Petisca, “Chinese Export Wares in an American Collection.” *Antiques and Fine Art Magazine* XIII, no. 3, Autumn 2014.

Matsen, C. and G. Landrey. “Arriving in Style: Winterthur’s 1927 Rolls-Royce Phantom I.” *Antiques and Fine Art Magazine* XII, February 2013.

Significant analysis contribution to Gordon, Eric. “Woodville’s Technique.” In *New Eyes on America: The Genius of Richard Caton Woodville*, edited by Joy Peterson Heyrman, 65-81. New Haven: Yale University Press, 2012.

Mass, J. and **C. Matsen**. “Understanding silver hollow wares of the eighteenth and nineteenth centuries: Is there a role for X-ray fluorescence?” *Studies in Conservation*, 57, no. S1 (2012): 191-8.

Mass, J. and **C. Matsen**. “Quantitative Non-Destructive Analysis of Historic American Silver Alloys: X-Ray Fluorescence Approaches and Challenges.” In *Handheld X-Ray Fluorescence Applications in Art and Archaeology*, edited by Aaron Shugar and Jennifer Mass, 214-47. Leuven: Leuven University Press, 2012.

Matsen, C., “Hue’s Clues.” *Old House Journal* 37, no. 5, September-October 2009.

Jablonski, M.A., and **C. Matsen**, editors. *Architectural Paint Research in the Built Environment*. London: Archetype Publications, 2009.

Matsen, C. “The Corbit-Sharp House at Odessa, Delaware: finishes analysis and interpretation of four interior rooms.” In *Paint Research in Building Conservation*, edited by Line Bregnhøi, Helen Hughes, Jenni Lindbom, Tone Olstad and Edwijn Verweij, 21-30. London: Archetype Publications, 2006.

Mass, J., **C. Matsen**, and J.H. Carlson. “Materials of the Pennsylvania German Fraktur Artist.” *The Magazine Antiques* 168 (3), September 2005.

Conference Presentations

ICOM-CC 18th Triennial Conference Linking Past and Future, Copenhagen, Denmark, 4-8 September 2017
 “When science reveals craft practices: Recent findings in the py-GC/MS analysis of Chinese export lacquer” Wood, Furniture and Lacquer Specialty Group

Exotic Surfaces: Chinese Export Lacquer Symposium and Workshop, October 28-29, 2015
 Summary of analytical results of specific Winterthur Museum, Peabody Essex Museum and Philadelphia Museum of Art Chinese export lacquer pieces”

5th International Architectural Paint Research Conference, Stockholm, Sweden, March 12, 2014
 Session: Standards, working procedures, demands in tendering processes
 “Identification of zinc-based paints in cross-section using autofluorescence, SEM-EDS elemental mapping, and TSQ fluorochrome stain”

Pittcon Conference and Expo, Orlando, FL, March 11, 2012

Invited Speaker “A Brief History of Infrared and Raman Spectroscopies in Conservation Science”

Artax Workshop, Providence, RI, June 16, 2006

“Fake Meissen and Questionable Pelletreau Attributions based on ED-XRF Analyses”

Bryn Mawr College, Department of Chemistry, Bryn Mawr, PA, March 17, 2006

Chemistry Colloquium, Joint talk with Dr. Jennifer Mass

“The Corbit-Sharp House at Odessa, Delaware: Paint Analysis and Interpretation of Four Interior Rooms”

Architectural Paint Research in Building Conservation, Copenhagen, Denmark, May 9, 2005

Session: Methods of Architectural Paint Research

“The Corbit-Sharp House at Odessa, Delaware: Paint Analysis and Interpretation of Four Interior Rooms”

Eastern Analytical Symposium, Somerset, NJ, November 18, 2003

Session: Analysis of Colorants, Pigments and Dyes on Art Objects

“The Corbit-Sharp House at Odessa, Delaware: Paint Analysis and Interpretation of Four Interior Rooms”

Posters

2018 Gordon Research Conference on Scientific Methods in Cultural Heritage Research

Poster “Polymorph identification by Raman Spectroscopy and MCR-ALS in Chinese Architectural Paints” Marcie B. Wiggins, Liu Mengyu, Catherine Matsen, Liu Chang, and Karl S. Booksh (July 22 - 27, 2018)

2018 Gordon Research Conference on Scientific Methods in Cultural Heritage Research

Poster “Preventive Conservation Science: assessing the mercury content of a large decorative arts collection” Rosie Grayburn, Catherine Matsen, and Joelle Wickens (July 22 - 27, 2018)

IIC (International Institute for the Conservation of Historic and Artistic Works) 2014 Congress

‘Lacquered Furniture in an American Collection: Investigations into Chinese Export Furniture at Winterthur Museum, DE, USA’ João Petisca, Stephanie Auffret, Catherine Matsen, W. Christian Petersen, Mark Anderson and Jennifer Mass. Poster presented at the IIC Congress, September 22-26, 2014, Hong Kong, China.

ICOM-CC 15th Triennial Conference, New Delhi India

‘Thangka Production in the 18th-21st Centuries: Documenting the Introduction of Non-Traditional Materials into Himalayan Painting Practice’ Jennifer Mass, Jo-Fan Huang, Betty Fiske, Ann Shaftel, Xian Zhang, Richard Laursen, Courtney Shimoda, Catherine Matsen and Christina Bisulca. Poster presented at ICOM-CC 15th Triennial Conference, September 22-26, 2008, New Delhi, India.

FTIR and microRaman Surface Characterization of Polychrome-Decorated Western Han Bronze Ming-Ch’I (Spirit Vessels): A Hu, a Bianhu and a Fanghu

Poster presented at IRUG Meeting, March 26-29, 2008, Vienna, Austria

Co-authors Jennifer L. Mass and W. Christian Petersen

HPLC-PDA Analysis of Atypical Mahoganizing Stains in an Eighteenth-Century Connecticut High Chest Finish

Poster presented at MaSC Meeting, September 14-15, 2007, Philadelphia, PA

Co-authors Jennifer L. Mass, W. Christian Petersen and Maarten van Bommel

IIC (International Institute for the Conservation of Historic and Artistic Works) 2006 Congress
'The Pennsylvania German Fraktur Artist's Palette in the Context of Commercially Available Materials'
Jennifer Mass, Catherine Matsen and Janice H. Carlson. Poster presented at the IIC Congress, August 26
– September 1, 2006, Munich, Germany.

Outreach Presentations

Freer Sackler Chinese Objects Study Workshop: "Chinese Objects Outside of China"

Winterthur Museum, Garden and Library in collaboration with The Walters Art Museum, June 5-9, 2017
Ceramics Analysis with Ron Fuchs; Chinese Export Lacquer: cross-section microscopy and lacquer analysis

Furniture Forum Workshop, Winterthur Museum, Garden and Library, Winterthur, DE, April 8, 2017
"Evaluating and Understanding Historic Furniture Finishes"

Collector's Circle, Winterthur Museum, Garden and Library, Winterthur, DE, November 6, 2015
"Architectural Paint Analysis of the Winterthur Museum Rooms"
Presentation on architectural paint analysis with Linda Eaton

Prussian Blue High School Program, Winterthur Museum, Garden and Library, Winterthur, DE
May 17, 2018 (100 students); May 10, 2017 (100 students); April 27, 2016 (100 students); May 26, 2015
(100 students); May 14, 2014 (100 students); April 30, 2013 (80 students); April 3 and 4, 2012 (200
students)

Teacher Workshops on the Scientific Principles of Art Conservation, Winterthur Museum, Garden
and Library, Winterthur, DE
May 2, 2015; April 5, 2014; March 23, 2013; March 24, 2012

Ceramics Conference Workshop, Winterthur Museum, Garden and Library, Winterthur, DE,
April 24-25, 2014
"Maybe Washington Didn't Eat Here: Studying Society of Cincinnati Porcelain"
Joint presentation with Dr. Catharine Dann Roeber

Middletown Historical Society, Middletown, DE, Monthly Meeting, February 19, 2013
"Conservation Science: the Forensics of Cultural Material"

Teacher Workshops on Museum Jobs, Winterthur Museum, Garden and Library, Winterthur, DE
October 6, 2012

History Through Fiction Book Club, Winterthur Museum, Garden and Library, Winterthur, DE,
October 2, 2012
"XRF Analysis of Silver Objects"; with Ann Wagner, Curator of Metals

Collector's Circle, Winterthur Museum, Garden and Library, Winterthur, DE, November 2, 2011
Presentation on painted garden furniture with Maggie Lidz

American Chemical Society Career Café, Rider University, Lawrenceville, NJ, October 29, 2011
Presentation about my career path and conservation science

Furniture Forum Workshop, Winterthur Museum, Garden and Library, Winterthur, DE,
April 27 and 30, 2011
“Painted Furniture: A Demonstration of Techniques and Explanation of Paint Materials”
Joint presentation with Peter Deen

Silver Symposium, Winterthur Museum, Garden and Library, Winterthur, DE, September 5-6, 2008
“What Can Science Tell Us About Silver? X-ray Fluorescence Analysis of Historic Alloys”

ChemVets Group of the Delaware Section of the American Chemical Society, Wilmington, DE
April 15, 2008
“Conservation Science: The Forensics of Cultural Material” Joint talk with Dr. W. Chris Petersen

Southern New Jersey Section of the American Chemical Society, Deptford, NJ, November 13, 2007
“Conservation Science: The Forensics of Cultural Material” Joint talk with Dr. W. Chris Petersen

Princeton, NJ Section of the American Chemical Society, Princeton, NJ, July 19, 2007
“Conservation Science: The Forensics of Cultural Material” Joint talk with Dr. W. Chris Petersen

Delaware Section of the American Chemical Society, Dupont Country Club, Wilmington, DE
February 22, 2007
“Conservation Science: The Forensics of Cultural Material” Joint talk with Dr. W. Chris Petersen

Collecting “China”, Winterthur Museum, Garden and Library, Winterthur, DE, September 30, 2006
Lunchtime lecture “Conservation Science and the Analysis of Chinese Pith Paintings”

Furniture Forum, Winterthur Museum, Garden and Library, Winterthur, DE, March 3, 2006
“Understanding Painted Surfaces Layer by Layer” Joint talk with Dr. Susan L. Buck

Teaching

Winterthur/University of Delaware Program in Art Conservation, Winterthur, DE

ARTC 672 Advanced Analytical Techniques 1

Ethics in Conservation Science (2016 – 2018)

UV/vis spectroscopy laboratory (2003 – 2014)

X-ray microanalysis (2013 – 2018)

ARTC 673 Advanced Analytical Techniques 2

Thin Layer Chromatography laboratory (2004 – 2018)

Guest Lectures

Winterthur/University of Delaware Program in Art Conservation, Winterthur, DE

ARTC 617 Cross-section Microscopy of Painted Surfaces

“The Corbit-Sharp House at Odessa, Delaware: Paint Analysis and Interpretation of Four Interior Rooms”

November 16, 2004; November 30, 2005; November 21, 2006; October 30, 2007;

September 16, 2008; November 10, 2009

ARTC 671 Conservation Science

“Photographic Chemistry”

January 7, 2019

ARTC 667 Conservation Principles 1

“Materials Analysis of Chinese export lacquer”

December 12, 2017; December 7, 2016

University of Delaware, Undergraduate Program in Art Conservation
ARTC 464 Preservation Internship

XRF lecture – October 24, 2014, December 9, 2016; November 30, 2018
 Conservation Science – October 4, 2013

Winterthur/University of Delaware Early American Culture Program, Winterthur, DE
EAMC604 History of Nineteenth Century American Interiors

“The Role of Paint Analysis in the Interpretation of Historic Interiors”
 May 3, 2004; April 10, 2007

University of Pennsylvania, Historic Preservation Program, Philadelphia, PA
HSPV 656 Advanced Conservation Science

October 1, 2014; October 9, 2013

HSPV 739 Conservation Seminar: Masonry
 November 4, 2013

HSPV 740 Conservation Seminar: Finishes

November 8, 2017; September 14, 2016; March 30, 2015; February 10, 2014; September 19, 2012

Service

Member of Membership Designation Working Group October 2017 – present
 American Institute for Conservation of Historic and Artistic Works (AIC)

Tour Coordinator July 2010 – present
 Winterthur Museum Conservation Department

Radiation Safety Officer February 2009 – present
 Winterthur Museum Conservation Department

Member of Professional Development Fund Committee September 2012 – present
 Winterthur/University of Delaware Program in Art Conservation
 Chair 2017 – present
 September 2003 – February 2005

Member of Safety Team August 2004 – September 2014
 Winterthur Museum Conservation Department

Synergistic Activities

- 150 art conservation M.S. students supervised in conservation science of objects such as paintings, textiles, works of art on paper, furniture, photographs, ceramics, glass, archaeological material, architectural finishes, etc. (Ten students supervised per year over the course of fifteen years during a one-year research project spread over a two-course sequence.)
- Member of Advisory Committees for 32 WUDPAC students
- Co-organizer, session moderator and post-print paper organizer for 6th International Architectural Paint Research Conference *Powers of Ten*, Columbia University March 15-17, 2017
- Co-organizer, session moderator and post-print paper editor for 3rd International Architectural Paint Research Conference, Columbia University January 17-19, 2008
- Supervisor to Winterthur Scientific Research and Analysis Laboratory interns Marc

Vermeulen (May - August 2009), Alyssa Hull (June-August 2012), Soon Kai Poh (October 2014 – January 2015), Marcie Wiggins (September 2016 – present), and Laela Ezra (June – July 2018)

Membership

American Institute for Conservation of Historic and Artistic Works (AIC) Architecture Specialty Group (ASG) Research and Technical Studies (RATS)	2003 – present
Wilmington Community Orchestra French horn player with amateur ensemble that performs four concerts per year of music from the standard symphonic and concerto repertoire.	1998 – present
Bryn Mawr Haverford Orchestra French horn player with bi-college orchestra that performed two concerts per year.	1994 – 1997