

# CONSERVATION IDP



THOMAS (TOM) MCCLINTOCK CONSERVATION IDP GRADUATE STUDENT  
RECORDING ROCK ART AT CATALINA ISLAND (2015)

## ANNUAL REPORT

# CONSERVATION IDP

**10th Anniversary**  
Class 2008 in front row from left: Liz Chayes (Werden), Allison Lewis, Molly Gleeson, Steven Pickman, Ozge Gençay Üstün, and Christian de Brer)



## 10th Anniversary

2015 marks the tenth year that the UCLA/Getty Master's degree Interdepartmental Program (IDP) on the Conservation of Archaeological and Ethnographic Materials has succeeded to educate and train students in the highest standard of conservation practice, research and decision-making and prepare them for leading careers in the preservation of archaeological and other cultural heritage materials. Indeed, the Conservation IDP has already contributed to the training of highly skilled conservators, with graduates of the program being offered permanent positions at prestigious institutions such as the Natural History Museum in Los Angeles, the National Air and Space Museum/Smithsonian Institution, the Royal Museum for Central African Art in Brussels (Belgium), the Fowler Museum at UCLA and others.

As ever, we are grateful to the Getty Conservation Institute and the very generous supporters of the IDP for the extraordinary opportunities they offer our students. Thanks to the generosity of the Andrew W. Mellon Foundation, the Samuel H. Kress Foundation the Steinmetz and

Friends of Archaeology Funds at the Cotsen Institute of Archaeology and the support of the Steinmetz Foundation and the Sammy Yukuan Lee Foundation we are able to support training opportunities abroad for our students and to engage in conservation research and community service contributing to the preservation of important collections and sites at risk around the world. We are also most indebted to the Kahn Trust and UCLA alumnus Jeffrey Cunard for their recent major donations to match the Andrew W. Mellon endowment challenge bringing the endowment to fulfillment.

*Ioanna Kakoulli*

*Lore and Gerald Cunard Chair of Conservation & Prof. of Materials Science and Engineering*

## UCLA/Getty Conservation Interdepartmental Program (IDP) of Archaeological and Ethnographic Materials

The Program provides an excellent platform for education and research in the conservation of material culture. It supports discovery and innovation through research that transcends the boundaries of traditional disciplines. It uniquely trains the next generation of conservators in the best practices and methods of cultural heritage conservation through various pedagogical approaches including, but not limited to, core teaching and learning, independent research, and laboratory experience in museums and in the field. Finally, it positively impacts the community by engaging with a more informed public that would seek to protect cultural heritage from imminent threats. The three-year program leading to a master's degree consists of two years of coursework and laboratory work on artifacts, emphasizing research-based practice, combined with a summer internship between the first and second years, and an eleven-month internship period that includes the summer between the second and third years and the entire nine-month third year. A master's research paper is completed at the end of the second year of study to allow students to concentrate on their internship duties and conservation work in the third year.

### 2015 Spotlight

#### Conservation IDP receives \$1M from two donors to meet Mellon Foundation's endowment challenge

In 2015, the Conservation IDP has received two gifts of \$500,000, successfully completing a \$1 million match challenge presented by the Andrew W. Mellon Foundation in 2011. A gift from the Sady Kahn Trust, administered by attorney-trustee James Keir, will support the Kahn Graduate Fellows in the Program, while alumnus Jeffrey Cunard's donation established the Lore and Gerald Cunard Chair in the UCLA/Getty Conservation Program. We are indebted to the generosity of the Mellon Foundation, Jeffrey Cunard and the Kahn Trust.

The completion of the match challenge provides a competitive edge to our Program and we are now in a stronger position to grow the much-needed pipeline of conservation leaders with the specialist knowledge and skills to preserve cultural heritage materials.

<http://conservation.ucla.edu/content/sady-kahn-trust-gives-conservation-program-its-first-matching-gift>

<http://www.college.ucla.edu/2015/05/05/ucla-conservation-program-receives-1-million-from-two-donors-to-meet-mellon-foundations-endowment-challenge/>



Sady and Ludwig Kahn



Lori and James Keir



Jeffrey Cunard

### In the News

#### A Race Against Time by Mary Daily

<http://magazine.ucla.edu/depts/quicktakes/a-race-against-time/>



Graduate Conservation IDP student Heather White (left) with IDP alumna Alison Lewis (Class 08) treating objects in the field, Poggio Colla Archaeological Site, Italy

## Class 2016: Students' Summer & 3rd Year Internships

Elizabeth (Betsy Burr) will be spending the summer 2015 at the [Alaska State Museum](#). The Museum recently moved into a new building, and is preparing to open to the public. Betsy will be based in the conservation department to prepare objects for exhibition, and working closely with curators, mount makers, and other interns. A couple of the objects that she will be treating this summer include a kayak, a silk flag, and an archaeological raven's tail robe fragment. For her third year internship (2015-16), Betsy will be working at the [Arizona State Museum](#) in the preservation department on a variety of materials and projects.

In October 2014, Betsy's presentation "Surface Enhanced Raman Spectroscopy (SERS) For Direct On-Single-Fiber Dye Analysis Of Archaeological Peruvian Textiles" was given at the *Congreso Latinoamericano de Arqueometria* in Mexico City.

In April 2015, she presented a poster at the *Association of North American Graduate Programs in the Conservation of Cultural Property* (ANAGPIC) titled "Non-destructive technical study of a miniature Tuareg tamzak."

Betsy co-authored (along with I. Kakoulli and V. Muros) two peer-reviewed research papers titled "New advancements in SERS dye detection using interfaced SEM and Raman spectromicroscopy ( $\mu$ RS)" in the *Journal of Raman Spectroscopy*, and "Interfaced SEM and micro-Raman Spectroscopy for SERS Analysis of Dyes on Single Fibers" in *Microscopy and Microanalysis*.

In Spring 2015, Betsy was also involved in a study on detecting brominated pesticide residues on collections at the Fowler Museum (with E. Pearlstein and L. Day from UCLA/Getty program), with the intentions of publishing the results.



**Betsy Burr**

Lesley Day will spend this summer (2015) at [Hibulb Cultural Center](#) in Tulalip, Washington, where she will be working with large scale wooden objects such as story poles and canoes, in addition to smaller scale treatments. She will also be continuing an on-going collections survey. For her third year internship (2015-16), Lesley will be at the [American Museum of Natural History](#) in New York. She will be working in the conservation lab and will be involved in treating and re-housing the Siberian collection from the Jessup North Pacific Expedition, conducting a collections survey, research and on other day-to-day operations of the conservation lab.

In April 2015, Lesley presented a poster at ANAGPIC titled "Diagnostic Imaging Techniques for the Identification of Tortoise Shell".



**Lesley Day**

Colette Khanaferov will spend her summer (2015) in [Shangri La](#), in Hawaii, working under the supervision of conservator, Kent Severson. While there she will be working on the treatment of the Dining Room Lanai Tiles. The treatment and project consists of mortaring and repointing ceramic tiles from Iran. The wall has undergone previous conservation interventions and in some cases needs to be reversed. For her third year internship 2015-16, Colette will be at [Benaki Museum](#) in Athens, Greece and the Los Angeles County Museum of Art ([LACMA](#)). At the Benaki Museum she will be working under Head of Conservation Vassilis Paschalis and at LACMA under Head Objects Conservator John Hirx.

In April 2015, she presented a poster at ANAGPIC titled "Piecing together the history of an 18th century printed Armenian Prayer Scroll".

Colette is also the recipient of the prestigious Mangasar M. Mangasarian Award at UCLA for 2015-16.



**Colette Khanaferov**

**Thomas (Tom) McClintock** will be spending the first part of his third year internship (2015-16) out of Canberra with [Stepwise Heritage and Tourism](#) (SHT). The broad mission of Stepwise is to assist communities and individuals, realize their goals of cultural heritage management, through programs of indigenous tourism, sustainable tourism, land management and cultural heritage conservation. Through SHT, Tom will be working with various conservation professionals, including Nicholas Hall and Paul Tacon, on a number of projects, including assisting a newly formed group of indigenous rangers to implement a monitoring and documentation program in Kakadu National Park, and conducting a program of monitoring and possible intervention at several rock art sites near Canberra that have been affected by dust accumulation. In Cambodia he will be working on two different projects. In the first, under the supervision of Thomas Bernecker, affiliated with the [Deutsche Gesellschaft für Internationale Zusammenarbeit \(GIZ\) GmbH](#) he will be conducting research on the efficacy of natural hydraulic lime mortars for use on the sandstone found at the temples at Angkor, which will involve a mix of laboratory and fieldwork. For the second project, he will be at Conservation d'Angkor, a repository of material from the temples of Angkor that was established to safeguard these materials from looting and destruction. There, he will be conducting documentation of a number of stele and other materials, with a focus on RTI imaging for the translation of the ancient inscriptions in collaboration with the [École française d'Extrême-Orient \(EFEO\)](#).

In April 2015, Tom presented a paper: "Torqua Cave: Documentation and Condition Assessment of Catalina's Rock Images" at the Association of North American Graduate Programs in the Conservation of Cultural Property (ANAGPIC) Annual Conference.



**Tom McClintock**

**William Shelley** will be spending Summer 2015 at [Gordion](#) in Turkey working on excavated small finds. He will also be involved in the pebble mosaic conservation project as well as the conservation of the Midas Tomb. For the year (2015-16) William will be an intern at the [Laboratory of Archaeometry](#), University of Peloponnese, Greece, assisting with analytical characterization of glasses and pottery. His conservation projects will include working at the archaeological site of Messene as well on the conservation of archaeological materials housed at the University of Peloponnese.

William was a co-author (with V. Muros and I.Kakoulli) of the paper "The technology and trade of glass in SE Europe: Analysis of 12th-9th c. BC glass from Lofkënd and Methone" at

the Society for American Archaeology 80th Annual Meeting, April 15-19, 2015. San Francisco, CA.

He has also presented a poster at ANAGPIC 2015 titled "Preliminary Research on Biocorrosion of Archaeological Glass".



**William Shelley**

**Heather White** will be spending the first part of her third year internship (2015-16) at the [The Nelson-Atkins Museum of Art](#) in Kansas City, working with stone Egyptian objects. For the second part of her internship she will be at the [The British Museum](#) working with archaeological ceramics, glass and metal objects.

In January 2015, Heather co-authored and presented a poster, "Applications of Reflectance Transformation Imaging for the Documentation and Study of Etruscan Material" along with conservator Allison Lewis, at the American Institute of Archaeology (AIA) meeting held in New Orleans, LA.

In April 2015, Heather also gave a presentation on her thesis work titled "An Analysis of Unidentified Dark Materials Between Inlaid Motifs on Andean Wooden Qeros: Preliminary Findings" at the Association of North American Graduate Programs in the Conservation of Cultural Property (ANAGPIC) Annual Conference.

Finally, Heather finished her year conducting Oddy tests on a food-grade silicone rubber for a co-authored paper titled "The Use of Copyflex Food Grade Silicone Rubber for Making Molds", a project lead and presented by conservator Vanessa Muros at the American Institute for Conservation (AIC) 2015 annual meeting held in May in Miami, FL.



**Heather White**

## Visiting faculty

### Dr. Guofeng Wei

The UCLA/Getty Conservation Program welcome visiting scholar Dr. Guofeng Wei, who will be working with us through January 2016 pursuing research on mortars and broke objects. Dr. Wei comes to us from the Department of History, Anhui University, China.

He received his Ph.D. in Scientific History and Archaeometry from the University of Science and Technology of China. His current research focuses on the recipes and crafts of historical lime mortars of China, as well as a study on the application of traditional stick rice-lime mortar in conservation of cultural relics. More recently, he carried out research studying the trace element characteristics of copper prills in slag from Tangjidun sites of copper smelting dating back to the late Shang Dynasty (ca. 1300 BC) in Anhui Province. In addition he is studying the casting technology of bronze vessels dating from the late Shang Dynasty to Spring and Autumn Period (ca. 1300BC – 470 BC) from Zongyang County.

Besides his research, Dr. Wei has provided two lectures on ancient metallurgy and metal casting in the course Conservation Laboratory: Metals II (CAEM 239).



**Dr. Guofeng Wei**, visiting faculty from the Department of History, Anhui University, China

### Dr. Celestino Grifa

Dr. Celestino Grifa from the Department of Science and Technology at the Università degli Studi del Sannio, Benevento, Italy is a visiting scholar in the UCLA/Getty Conservation Program, the Department of Materials Science and Engineering and the Molecular and Nano Archaeology Laboratory (MNA Lab) for the months of May and June 2015. During his tenure at UCLA, he has been conducting research on Roman ceramics from the archaeological site of Pompeii, Italy. In this period, he completed measurements on thin sections of unfired and fired ceramic sherds using VPSEM-EDS and Raman spectromicroscopy at the MNA Lab. During his stay at UCLA he gave a talk on Egyptian blue and green frit production in the Roman period and assisted students with petrographic analyses of mortars and ceramics.



**Dr. Celestino Grifa**, visiting faculty from the Università degli Studi del Sannio, Dept. of Science and Technology, Italy

## Incoming Conservation IDP students (Class 2018)

**Morgan Burgess** graduated from Franklin & Marshall College in 2012 with a B.A. in Classical Archaeology and a minor in Studio Art. Her first conservation experiences were as an undergrad at the Mugello Valley Archaeological Project: Poggio Colla Field School in Vicchio, Italy. After graduating from Franklin & Marshall, Morgan began a two year post-baccalaureate study in Chemistry at Rutgers University and a pre-program internship at the University of Pennsylvania Museum of Archaeology and Anthropology. After two years of chemistry and about a year and a half at the Penn Museum, Morgan moved to Austin, Texas for an internship at the Harry Ransom Center at UT Austin volunteering in the books conservation lab. Her professional interests include material science, ancient production techniques, and the relationship between conservation, art insurance, and forged art.

**Mari Hagemeyer** graduated from the University of Maryland in 2013, receiving a B.S. in Materials Science and Engineering with a minor in French. The following August, she started working as an intern with the U.S. Navy's Naval History and Heritage Command in the Underwater Archaeology Branch. She spent nine months working with the UAB, on a diverse set of projects ranging from collections management to historical research. After leaving the UAB, she also worked as an intern with the Colonial Williamsburg Foundation's archaeological conservation lab, and with the Los Angeles County Museum of Art's objects lab.

Mari's focus in her undergraduate program was on soft materials, and she hopes to be able to explore this subject further into the conservation of historical polymeric materials while studying with UCLA/Getty's program. She is also very interested in conservation ethics and the interplay between anthropological studies and modern-day peoples.

**Marci Jefcoat** graduated from California State University, Sacramento with a BA in Forensic Chemistry with an

Art History Minor. Marci's introduction to art conservation was during an art history lecture about the restoration of the bronze Riace Warrior sculptures from 5th century BCE Greece.

Recognizing that the conservation process required techniques similar to those learned in chemistry and studio art, she knew that she wanted to pursue this path. Marci's pre-program experience consists of research into polymeric materials and the treatment of ethnographic, painting, textile, paper, photograph, and technological objects. Marci has interned with the conservation laboratories of private practice conservators in San Francisco, as well as the following Smithsonian Institution laboratories: the Museum Conservation Institute (MCI), National Air and Space Museum (NASM), and the National Museum of the American Indian (NMAI). In Summer 2014, she was the Andrew W. Mellon Conservation Intern at the Huntington Library in Pasadena.

**Hayley Monroe** received her B.A. from Mount Holyoke College in 2008 in Classics. After graduation she attended the Poggio Civitate Archaeological Field School in Italy where she first became interested in conservation. After a couple of seasons she joined the Ziyaret Tepe Archaeological Project near Diyarbakir in the southeast of Turkey. There she was a member of a small field conservation team and worked mostly on ceramics and metals. While in Turkey, she and her colleagues also worked closely with the conservation department at the Diyarbakir Museum to help instruct the staff on how to best care for archaeological material.

She has also volunteered with the Giza Archive Project and interned in the conservation lab of the RISD Museum, at Brown University's Haffenreffer Museum of Anthropology, Rough Point Mansion in Newport, Rhode Island, and the Wadsworth Atheneum in Hartford, Connecticut.

**Lindsay Ocal** received her B.A. with majors in History and Archaeology and minors in Art History and Biblical Languages from Lycoming College in 2007. She earned an M.A. in Art History with a concentration in Egyptian Art and Archaeology from the University of Memphis in 2011. Before being

introduced to conservation, she worked on archaeological digs in Egypt and Israel, interned at the Egyptian Museum in Cairo, and studied Arabic at the American University in Cairo. While working for the American Research Center in Egypt (ARCE) as Project Assistant on the Conservation of the Akhenaten Talatat at Karnak Temple Project, she fell in love with conservation and decided to pursue it as a career. She spent two years working on archaeological conservation and documentation projects at Karnak Temple. She also participated in a workshop on Preventive Conservation at a historic house on Ossabaw Island, GA and spent 15 months interning in the Textile Conservation Lab at the Fine Arts Museums of San Francisco.

**Michaela Paulson** received her B.A. magna cum laude in Archaeology with a minor in Art History from Tufts University in 2012. As an undergraduate, she worked with Rhode Island School of Design conservator Ingrid Neuman, learning conservation basics and hands-on techniques of cleaning a sculptural, mixed media topographical map. She gained experience during her year abroad at University College London, where she took courses in the Institute of Archaeology, learning about the importance of first aid for archaeological finds. A later field school in West Dean, Sussex solidified her interest in conservation on archaeological sites. She spent the three years after graduating at the School of the Museum of Fine Arts in Boston, immersed in studio art and the technical processes behind modern artistic creations, especially for metals and ceramics. Simultaneously, she was the pre-program intern in the Objects Conservation Lab at the Museum of Fine Arts, Boston working on a wide range of materials. In June of 2015 she completed a course in the conservation of archaeological ceramics with the San Gemini Preservation Studies Program in Umbria, Italy. As she begins graduate work at UCLA, Michaela is interested in furthering her knowledge of treating inorganic materials, but also to delve into issues surrounding outreach and promotion of the field, with the goal of increasing the number of archaeological excavations with professional conservators.

**Research areas of faculty and academic staff at a glance!**

**Ioanna Kakoulli**



[Dr. Ioanna Kakoulli](#) specializes on color in the ancient world; technology (raw materials, composition, microstructure); weathering and diagenesis of cultural materials; management and preservation of sites; forensic archaeometry; spectral imaging; spectroscopy; synthesis of novel biomimetic conservation materials.

**Ellen Pearlstein**



[Ellen Pearlstein](#)'s research is on ethnographic materials; objects made from organic materials; preventive conservation; environmental protection for collections; lightfastness of natural (undyed) featherwork; standardization of conservation documentation for research access; conservation education.

**Christian Fischer**



[Dr. Christian Fischer](#)'s research focuses on the characterization, weathering and conservation of stone-based materials (stone sculptures, architectural elements, stone artifacts); provenance studies; petrography; portable technologies; conservation and archaeological science; polymers; surface/interface science; geoscience.

**Vanessa Muros**



[Vanessa Muros](#) focuses on archaeological conservation; conservation of metals; field conservation methods; weathering and conservation of archaeological glass; desalination; conservation education and outreach.

**David A. Scott**



[Dr. David A. Scott](#)'s expertise is on ancient metals; the conservation of metallic artifacts; metallography; pigment identification problems; ancient Egyptian colorants; Colombian gold; Ecuadorian platinum and New World copper alloys.



## Faculty Advisory Committee

The Faculty Advisory Committee (FAC) oversees all curricular affairs relating to the Conservation Interdepartmental Program. The committee members serve an annual renewable term and meet at least annually to discuss and vote on any changes to courses offered by the program, degree requirements and educational policy. In addition, the FAC makes recommendations as to the budget and planning aspects of the program.

- Mark Harrison, (Chair, Advisory Committee) Distinguished Professor, Earth, Planetary & Space Sciences
- Robin Garrell, Professor, Chemistry, Vice Provost for Graduate Education and Dean of the Graduate Division
- Mark Goorsky, Professor, Material Science & Engineering
- John Papadopoulos, Professor, Classics
- Lothar von Falkenhausen, Professor, Art History
- Willeke Wendrich, Professor, Near Eastern Languages
- Charles Stanish, (ex-officio) Director, Cotsen Institute of Archaeology, Professor, Anthropology

## Spotlight on Staff

### Amber Cordts-Cole Program Coordinator

Amber came to our program in June 2005, just prior to the first class starting in Fall of 2005. She has been at UCLA since the 80's, first as a student and then within the David Geffen School of Medicine's Student Affairs Office.

While she was hired to handle student affairs, her responsibilities have grown to encompass all aspects of the program. Amber starts working with the students when they apply to the program, assisting them throughout their years here and then maintains contact after they have graduated.

Not only is Amber the point person for the students, she is also the liaison for all UCLA campus offices, including graduate division, registrar, graduate student support, various internship sites and supervisors around the US and in foreign countries, various Conservation interest groups, other US Conservation programs, as well as the Getty Conservation Institute and Museums around the country.



**Amber Cordts-Cole**  
Program Coordinator

Amber's responsibilities vary from day to day and year to year. Having been here at UCLA for decades has allowed her to make the contacts and gain the experience necessary for her every changing position.

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## Teaching

### Completion of instruction of revised curriculum launched in 2013-14 academic year

This year we have completed the instruction of the revised curriculum on the Conservation of Archaeological and Ethnographic materials launched in the academic year 2013-14. The new curriculum provides an introduction to different classes of archaeological and ethnographic materials (organic and inorganic), their structure, properties and deterioration. To avoid redundancies, contents are well defined in individual courses, while a new course on fundamentals in conservation addresses all mechanisms that are common to different materials such as porosity, wetting, diffusion, phase transformations. With a class on conservation documentation and analytical photography, students learn how to record and document cultural materials while they develop skills at observing and identifying attributes pertaining to the technique and deterioration of the objects. Two distinct courses on scientific investigations (one lecture and one laboratory) introduce students to basic and advanced characterization techniques and provide them with the knowledge and skills to analyze and interpret data that will help them with the development of conservation proposals and treatments. A course on conservation materials (polymers, solvents, inorganic mineral treatments) teaches them the chemistry and interactions of conservation materials (treatment-related) with the original fabric of the objects developing critical understanding in selecting methods and materials for treatments. A course on environmental parameters introduces students to preventive measures for museum collections and archives and a course on ethics discusses charters and professional conduct in conservation. Two courses, one on

ethnography and one on field methods in archaeological conservation contextualize the material with the cultural/ archaeological meaning and significance.

Finally, seven specialized research-based laboratory courses on conservation offer students the ability to put all they have learned in context and develop research and conservation practical skills. The summer internship between year one and a long internship during their third year (total of 11 months) introduces students to the real-life conservation world while gaining more experience in the field.

**“Really enjoyed the hands on approach of this class. It was great to be able to create frescoes, consider all elements when assessing an outdoor wall and lastly being able to make a visit to the Watts towers. Also really enjoyed the final project where I was able to research an interesting topic that spoke about wall painting conservation approaches and processes behind conservation decision making.”**

**Anonymous, course evaluation CAEM M250/MAT SCI M215 (15S)**

**“ I thought the strengths of this course were the level of consultation and collaboration with weavers and museum professionals regarding, in particular, the materials and techniques involved in basket weaving and related issues such as care for historic baskets and the presence of pesticides/pollution on baskets and gathered materials.”**

**Anonymous, course evaluation CAEM 238 (15S)**

**Left - Visit at Watts towers with Mark Gilberg, Director of Conservation, LACMA**  
(Course CAEM M 250/MAT SCI M215, W15)

**Right - Rose Ann Hamilton demonstrating coiling to Conservation IDP students, at Agua Caliente Cultural Museum**  
(Course CAEM 238, W15)



## Guest Lecturers

Guest lecturers from other departments at UCLA, academic institution and museums mainly from Southern California participate in the instruction of our program bringing their own expertise and perspective and thus enriching our curriculum. These professionals come from a variety of disciplines within and outside the broader Conservation field and include: forensic scientists, law enforcement agents, physicists, chemists, engineers, lawyers, entrepreneurs, policy makers, curators, art historians, archaeologists and others.



Prof. David A. Scott (right) with guest lecturer, Dr. Alice Paterakis, Director of Conservation Kaman-Kalehöyük, Yassihöyük, and Büklükale Excavations Japanese Institute of Anatolian Archaeology Kaman, Kirsehir, Turkey.

Gap filling exercise for course CAEM 230.

## Contributions of the Conservation IDP to students from other departments & Research Groups



Undergraduate and graduate students from different departments enrolled in course CAEM 220/120, S15.

Students participated in a block lifting exercise at the Getty Villa premises to practice methods for stabilizing, facing and lifting fragile artifacts.

The Conservation IDP offers multi-listed and cross-listed courses with other departments on campus serving both the graduate and undergraduate communities of the university. Courses are multi/cross-listed with the Departments of Materials Science and Engineering, Information Studies and Art History. However, many other students (both graduates and undergraduates) mainly from the Archaeology IDP and the Anthropology Department enroll in CAEM (Conservation of

Archaeological and Ethnographic Materials) courses.

Moreover, the core faculty of the UCLA/Getty Conservation Program though only at 50% in their home departments, maintains active research groups within their home departments as for example the [Archaeomaterials Group](#) and the [Molecular and Nano Archaeology Laboratory](#) offering mentoring and advising to graduate and undergraduate students.

## Diversity and Outreach

Diversity and outreach is very important to the mission of the UCLA/Getty IDP. The program is committed to public awareness and provision to the community and has been engaged since the beginning in activities to broaden participation of under-represented minority students and to cultivate an interest and respect on the world's cultural heritage in general. In academic year 2014-2015 program faculty and staff participated and organized various events. These include:

- tours of the UCLA and Getty Villa facilities for undergraduate college students and inner city school children;
- participation at the Getty College Night event at the Getty Villa;
- participation of faculty and 'academic/research staff' to summer field school and on site mentoring on archaeological and ethnographic conservation;
- multi-listing of conservation courses as graduate and upper division undergraduate courses in other departments (in the humanities, social sciences, information studies, natural sciences and engineering);
- organization of workshops and sessions in archaeology and science conferences;

- organization of workshops designed to introduce careers in curation and conservation to Native audiences;
- inviting diverse instructors and engaging Native American cultural specialists in graduate education;
- faculty mentoring activities of undergraduate students through their home departments;
- enabling participation of undergraduate under-represented minority students in program's faculty research projects and laboratories;
- keeping up to date the Program website <http://conservation.ucla.edu/>
- maintaining an active Facebook page (<http://www.facebook.com/UCLAGettyProgram>), Twitter <https://twitter.com/UCLAGettyCons> and Blog <http://uclagettyprogram.wordpress.com>.



UCLA/Getty students examine baskets in storage at Agua Caliente Cultural Center as part of course CAEM 238, W15.

## Research Highlights

### Ultraviolet-induced visible fluorescence and chemical analysis as tools for examining featherwork

Pearlstein, E., Melissa Hughs, Joy Mazurek, Christel Pesme, Renée Riedler, Molly Gleeson 2015, Ultraviolet induced visible fluorescence and chemical analysis as tools for examining featherwork, *Journal of the Institute of Conservation* (in press).

#### ABSTRACT

Feathers are found in cultural heritage collections of tribal arts from the Americas, Africa, and the Pacific as well as in contemporary art, European and American fashion, and in taxidermy and ornithology specimens. Although museum conservators routinely evaluate feathers by looking at insect damage and mechanical wear, as well as fading as evidence of light exposure, examination of feathers for visible fluorescence under an ultraviolet (UV) source is atypical. Recent research by both the authors and bird biologists indicate that nondestructive UV fluorescence examination can provide valuable information about the identification and pigmentation of feathers found in museum collections, but must be used with caution as both light exposure and adventitious materials may compromise fluorescence. The authors also evaluate different methods of chemical analysis for detecting light-induced chemical changes in feathers.

Recent research conducted jointly by UCLA and the Getty Conservation Institute illustrated the importance of identifying feather pigmentation systems in the design of a preventive conservation strategy. The difference in the quantity of light needed to fade undyed feathers can be 10-fold depending on the colorant systems present in the feather and the emission spectrum of the light. Feathers with color derived from the scattering of light through small scale feather structures are known to be more light-stable than feathers with coloration based on biological pigments. A number of feather pigments, including psittacofulvins found only in red and yellow pigments in birds in the Psittaciforme family, as well as porphyrins found in rusty brown owl plumage, may be identified by their specific ultraviolet-induced visible fluorescence (UVIVF).

Feathers whose pigments are not directly fluorescent may still undergo appearance changes under an UV source as a consequence of light aging. Fluorescence is an early marker of chemical change, and can be used to detect such change before it can be measured colorimetrically. Beyond knowing that UV fluorescence is a stable attribute of some feather pigments, and a light-sensitive attribute in others, the current authors were motivated to determine whether color shifts visible in UV-induced fluorescence could provide a nondestructive marker of photochemical change to the keratin feather structure. This article describes a variety of analytical techniques applied to light-aged feather samples to present the most sensitive methods for detecting chemical changes that parallel fluorescence changes. Museum featherwork, some with records of estimated display, were examined using UVIVF both to document psittacofulvin pigmented feathers expected to display fluorescence, and to compare non-psittacofulvin-pigmented feathers with artificial-aged feather samples.

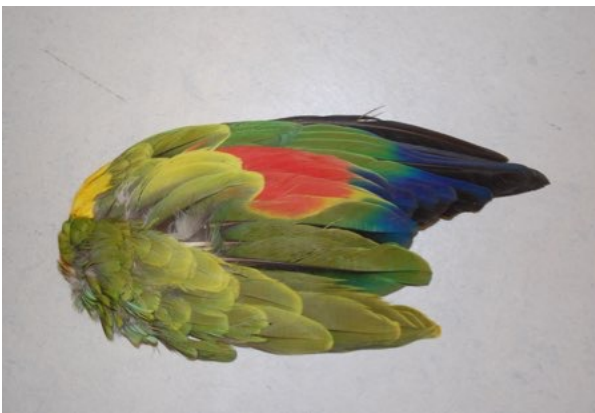


Figure 1



Figure 1b

**Figure 1.** Parrot wing (most likely Blue-fronted Amazon or *Amazona aestiva*) under diffused light, photo: Renée Riedler

**Figure 1b.** Parrot wing (most likely Blue-fronted Amazon or *Amazona aestiva*) showing UVIVF of psittacofulvin pigments in yellow, green and red areas, photo: Renée Riedler



Figure 2



Figure 2b

**Figure 2.** Scarlet ibis control feathers showing the uneven distribution of pigment, photo: Ellen Pearlstein

**Figure 2b.** Scarlet ibis feathers after 100 days of accelerated 'museum lighting' aging, photo: Ellen Pearlstein

## Research Highlights

### Earliest evidence for asbestos composites linked to Byzantine wall paintings production

Kakoulli, Ioanna, Sergey V. Prikhodko, Andrew King, and Christian Fischer. "Earliest evidence for asbestos composites linked to Byzantine wall paintings production." *Journal of Archaeological Science* 44 (2014): 148-153.

#### ABSTRACT

Evidence suggests that asbestos, a fibrous form of serpentine or amphibole was discovered and used in Cyprus since ancient times. In the first century AD, Pedanius Dioscorides in his treatise *De Materia Medica* V.138, refers to “λίθος ἀμίαντος” [lithos amiantos], a fibrous stone from Cyprus, cleansed by fire that was mainly used to manufacture fabrics. Other ancient Greek and Latin authors make reference to the use of this natural resource mainly for the production of textiles and oil-lamp wicks. Additional known uses of asbestos in antiquity include ceramic production as evidenced by the discovery in Finland of 2000 BC asbestos-tempered ceramic ware. The exploitation and use of this fibrous rock in the manufacture of cements, however, was thought to be a novelty of the late nineteenth century. Here we show that ‘amiantos’ composites were in existence in Byzantine Cyprus, emerging much earlier than the start of the modern asbestos industry. The identification of chrysotile mineral in CaCO<sub>3</sub>-rich uppermost plaster coatings, just beneath the paint layer, in twelfth century Byzantine wall paintings in the Enkleistra – place of reclusion – of Saint Neophytos, provides direct evidence for the earliest use of asbestiform fibres in wall-painting finish coatings. We demonstrate that Byzantine monks were familiar with the fabrication of asbestos-fibre composites and their superior properties over more common CaCO<sub>3</sub>/organic fibre plasters, traditionally used in Byzantine wall painting. We support that chrysotile fibres were exploited for their good physical, flexural, and insulating properties.

#### KEYWORDS

Asbestos composites; plaster finish coating; micro-Raman spectroscopy; Variable Pressure Scanning Electron Microscopy; Backscattered Electron Imaging; Byzantine wall paintings.

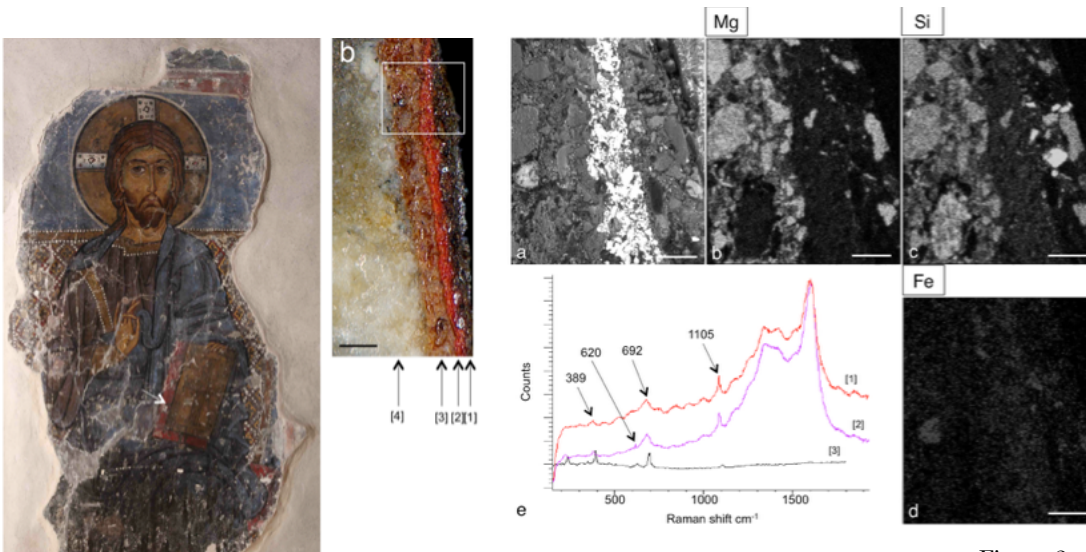


Figure 1

Figure 2

**Figure 1:** Detail of wall painting in the naos depicting the *Enthroned Christ* (a) dated to the late twelfth century. The white arrow indicates the location where the sample in image (b) was taken from. Digital photomicrograph of a cross-section (b) showing the stratigraphy of the painting. The white square marks the area described in Figure 2. Scale bar in image (b), 50 μm.

**Figure 2:** Backscattered electron (BSE) micrograph (a) of a paint cross-section (corresponding to the area marked with a white square in Figure 1). Elemental maps (b-c) showing the distribution of Mg and Si delineating a distinct layer corresponding to the presence of the asbestos finish coating. Spatial distribution of Fe (d) dispersed in both the Mg-Si layer and the Hg-S rich layer. Raman spectra (e) from two points in the Mg-Si rich layer (spectra [1] and [2]) compared to a reference chrysotile sample (spectrum [3]), confirming that the Mg-Si layer is predominantly chrysotile. Peaks are labelled by wavenumbers. Scale bar in SEM-BSE image (a) and EDS maps (b-d), 25 μm.

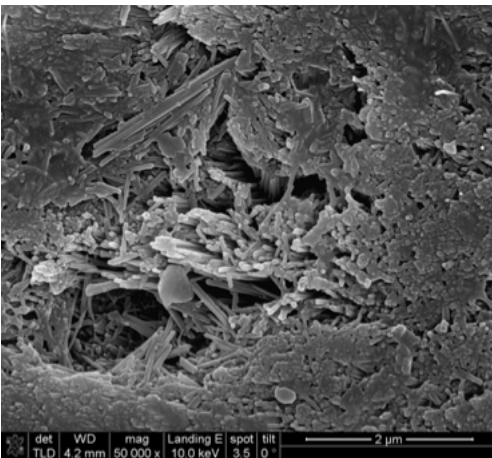


Figure 3

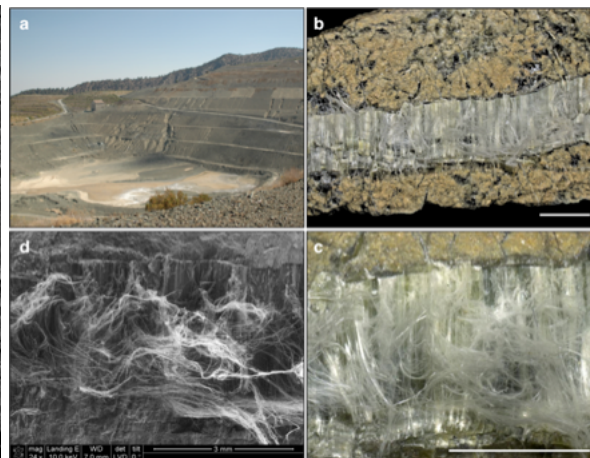


Figure 4

**Figure 3:** Secondary electron (SE) micrograph showing the fibrous nature of the particles in the finish coating at the interface between the red cinnabar paint layer and the plaster. The fibrous nature of the particles supports the presence of an asbestiform mineral (identified as chrysotile) used as finish coating prior to painting.

**Figure 4:** Asbestos mine (a) at Amiantos in the Troodos Mountains in Cyprus. Digital photomicrographs (b, c) and SEM secondary electron (SE) micrograph (d) of chrysotile mineral from Amiantos. Scale bar in digital photomicrographs (b, c), 3 mm.

## Christian Fischer

### Publications 2014-15

1. Kakoulli I., Prikhodko S., Fischer C., Bechtel H., Fakra S., Marcus M., 2014, 'Mapping and chemical speciation of arsenic in ancient human hair using synchrotron radiation', *Analytical Chemistry*, 86(1), 521-526.
2. Kakoulli I., Prikhodko S.V., King A. and Fischer C., 2014, 'Earliest evidence for asbestos composites linked to Byzantine wall paintings production'. *Journal of Archaeological Science*, 44, 148-153.
3. Fischer C. and Hsieh E., 'Non-invasive compositional analysis of Chinese blue-and-white porcelain from Indonesia and the Philippines: implications for trade and provenance'. *Journal of Archaeological Science* (under review).
4. Kaufman B., Docter R., Fischer C., Chelbi F., and Maraoui Telmini B., 'Ferrous metallurgy and surplus exchange from the Bir Massouda metallurgical precinct at Phoenician and Punic Carthage. *Journal of Archaeological Science* (under review).
5. Fischer C. and Kakoulli I., 'In situ reflectance and X-ray fluorescence spectroscopy for the study of the 12th century rock-cut paintings in the Enkleistra of St. Neophytos in Cyprus'. *Journal of Archaeological Science* (under review).
6. Fischer C., 'The Monumental Sandstone Sculptures from Koh Ker (Cambodia): Connections between Material Culture and Geology. To be submitted to Proceedings of the National Academy of Sciences (PNAS).
7. Martirosyan-Olshansky K., Fischer C. and Teeter W., 'Provenance study of obsidian artifacts from the Fowler museum collection (UCLA) using portable XRF. To be submitted to *Journal of Archaeological Science*.

### Research Fieldwork

**July 2014:** Enkleistra of St. Neophytos, Paphos and Church of Transfiguration, Sotera Cyprus. Funded by Ahmanson Funds, Cotsen Institute of Archaeology and, Leventis Foundation. Collaborators: I. Kakoulli, A. Zissimos, M. Parani.

**January-March 2015** Project: 'The Two Buddhist Towers: A multi-scalar evaluation of the practice, change, and function of Buddhism at the regional Angkorian center of Preah Khan of Kompong Svay, Cambodia (10th to 17th c. CE)'. Two years project (2015-16) implemented through a \$141,550 Collaborative Research Grant, Robert H. N. Ho Family Foundation/ ACLS Program in Buddhist Studies. Project coordinator: Dr. Mitch Hendrickson, University of Illinois, Chicago. Other collaborators: Dr. Dominique Soutif (EFEO), Dr. Julia Estève (Mahidol University, Bangkok), Dr. Cristina Castillo (UCL) and Dr. Kaseka Phon (RUFU, Phnom Penh).

**4-12 June 2015:** Campeche Mexico. Project "Chemistry, Variability and Provenience of Jaina Figurines: a Multiscale-Multianalytical Approach". A project funded by UC MEXUS CONACYT. Other collaborators: I. Kakoulli, S. López Varela, C. De Brer, K. Richter.

### Invited Lectures and Conference Presentations

1. Invited lecture: Fischer C. and Porte B., 'Analysis and Conservation of Stone Sculptures: Examples from Cambodia and Vietnam. History Museum of Vietnam, Hanoi, March 03, 2015.
2. Invited lecture: Fischer C., 'Ancient Khmer Stone Sculptures: Material Analysis, Provenance and Conservation. Buffalo State University, October 30, 2014, Buffalo.
3. Invited Conference Paper: Fischer C., 'Non-invasive Technologies for the Study and Preservation of Rock Art', World Heritage Value of Rock Arts, Seoul, September 24, 2014.

### Professional Activities & Committees

#### Professional Activities

- Consultant, UNESCO
  - Mission to South Korea (20-25 September 2014)
- Expert Witness for the Department of State and the Homeland Security Investigations on theft and looting of antiquities.
- Co-director of the Molecular and Nano Archaeology Laboratory and Archaeomaterials Group at UCLA.
- Research Associate, Ecole Française d'Extrême-Orient (EFEO), Paris.

#### University Committee Service

- Member of the Committee to Administer the UCLA/Getty CAEM IDP.
- Member of the Admissions Committee, UCLA/Getty CAEM IDP.
- Chair of MA thesis committee of Thomas McClintock, UCLA/Getty CAEM IDP.

#### Membership in Professional Societies

- Member of the SAS (Society of Archaeological Sciences).
- Member of the SAA (Society of American Archaeology).
- Member of the MSA (Mineralogical Society of America)

#### Teaching

##### Fall 2014

- MAT SCI 298: 'Advanced spectroscopy for the characterization of materials'
- CAEM 596: Independent Study
- CAEM 231: Conservation Laboratory 'Stone and Adobe'
- CAEM 290: Internship

##### Spring 2014

- CAEM 598: MA thesis preparation

## Ioanna Kakoulli

## Publications 2014-15

<https://ucla.academia.edu/IoannaKakoulli>

## Peer-reviewed

- Cheung, K. A., Xie, N., Yao, Z., Fischer, C., Muros, V., Prikhodko, S., Kakoulli, I. 'Materials Analysis', In book *Temple of the Night Sun: A Royal Tomb at El Diablo, Guatemala*, eds. Houston, S., Newman, S., Román-Ramírez, E.R., Garrison, T., Pre-Columbian Art Research Institute, San Francisco. (In Press)
- Kakoulli, I., Tzadik C., de Brer C., Richter K. N., López Varela S., Fischer, C., On-site characterization and determination of compositional variability of Pre-Columbian Jaina-style ceramic figurines by portable X-ray fluorescence (XRF) and fiber optic reflectance spectroscopy (FORS), *Applied Spectroscopy*. (Accepted 2015).
- North, A., Balonis-Sant, M., Kakoulli, I., 'Biomimetic hydroxyapatite as a new consolidating agent for archaeological bone', *Studies in Conservation*. (Accepted 2015).
- Neiman, M., Balonis-Sant, M., Kakoulli, I., 'Cinnabar Alteration in Archaeological Wall Paintings: An Experimental and Theoretical Approach', *Journal of Applied Physics A*. (Accepted 2015).
- Ma X., Shi Y., Khanjian H, Schilling M, Li M, Fang H., Cui D, Kakoulli I. A technical study of early imperial lacquerware from the Luozhuang Han tomb, China. *Archaeometry Journal* (2015) (Under Review).
- Prikhodko, Sergey V., Diana C. Rambaldi, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli. "New advancements in SERS dye detection using interfaced SEM and Raman spectromicroscopy ( $\mu$ RS)." *Journal of Raman Spectroscopy* (2015). DOI: 10.1002/jrs.4710
- Kakoulli, I., Prikhodko, S.V., King, A., Fischer, C., 'Earliest evidence for asbestos composites linked to Byzantine wall paintings production', *Journal of Archaeological Science* 44, (2014) 148-153.
- Prikhodko, Sergey V., Diana C. Rambaldi, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli. "Interfaced SEM and micro-Raman Spectroscopy for SERS Analysis of Dyes on Single Fibers." *Microscopy and Microanalysis* 20, no. S3 (2014): 2008-2009. <http://dx.doi.org/10.1017/S1431927614011775>
- Radpour, Roxanne, Neha Bajwa, James Garritano, Shijun Sung, Magdalena Balonis-Sant, Priyamvada Tewari, Warren Grundfest, Ioanna Kakoulli, and Zachary Taylor. "THz imaging studies of painted samples to guide cultural heritage investigations at the Enkleistra of St. Neophytos in Paphos, Cyprus." *SPIE Optics + Photonics Proceedings*, Manijeh Razeghi, Alexei N. Baranov, John M. Zavada, Dimitris Pavlidis (Eds.), doi: 10.1117/12.2062228: International Society for Optics and Photonics, 9199:91990Q-1 - 91990Q-9 (2014)

## Invited Lectures and Conference Presentations

## Invited Speaker and Keynote

- Kakoulli I., Photoluminescence and forensic detection of ancient pigments, TECHNART Conference, Catania, Sicily 27-30 April 2015.
- Kakoulli, I., 'Pigments, cosmetics and medicaments in classical antiquity: from alchemy to science', SciX 2014 (Society of Applied Spectroscopy), September 28-October 3, 2014, Reno-Tahoe, NV.

## Conferences Presentations

- Muros, V., N. Zacharias, W. Shelley and I. Kakoulli. The technology and trade of glass in SE Europe: Analysis of 12th-9th c. BC glass from Lofkënd and Methone. Society for American Archaeology 80th Annual Meeting, April 15-19, 2015. San Francisco, CA., 2015.
- Burr E., Prikhodko S.V., Rambaldi D. C., Muros, V., Kakoulli, I. "Surface enhanced Raman spectroscopy (SERS) using silver nanoparticle paste for direct on-single-fiber dye analysis of archaeological Peruvian textiles", Latin American Congress of Archaeometry, Mexico City, 26-30 October, 2014.
- Prikhodko S.V., Rambaldi D.C., Muros V., Burr E., and Kakoulli I., Interfaced SEM and micro-Raman Spectroscopy for SERS Analysis of Dyes on Single Fibers Microcopy & Microanalysis, Hartford, CT, August 3-7, 2014.
- Radpour, Roxanne, Neha Bajwa, James Garritano, Shijun Sung, Magdalena Balonis-Sant, Priyamvada Tewari, Warren Grundfest, Ioanna Kakoulli, and Zachary Taylor. "THz imaging studies of painted samples to guide cultural heritage investigations at the Enkleistra of St. Neophytos in Paphos, Cyprus." In *SPIE Optical Engineering+ Applications*,. International Society for Optics and Photonics, August 2014, San Diego, CA.

## Awards &amp; Honors

- Nomination to the 2015 Frontiers of Engineering Education (FOEE) Symposium (by Prof. Dwight Streit, chair of the MSE Department and member of the National Academy of Engineering).

## Research Fieldwork

**July 2014:** Enkleistra of St. Neophytos, Paphos; Church of Transfiguration, Sotera and Athienou Archaeological Project, Cyprus. Funded by Ahmanson Funds, Cotsen Institute of Archaeology, A.G. Leventis Foundation and NSF award #1139227. Collaborators: C. Fischer, A. Zissimos, M. Parani, M. Balonis-Sant, M. Toumazou, D. Counts.

**4-12 June 2015:** Campeche Mexico. Project "Chemistry, Variability and Provenience of Jaina Figurines: a Multiscale-Multianalytical Approach". A project funded by UC MEXUS CONACYT. Collaborators: C. Fischer, S. López Varela, C. de Brer, K. Richter.



## Professional Activities & Committees

### Professional Activities

- Scientific consultant (pro-bono) and expert witness for the Homeland Security Investigations unit on looted antiquities
- Invited speaker and keynote in International Conferences (SciX 2014 and Technart 2015)
- 2014 Reviewer of promotion (tenure) dossiers: Promotion to tenure for Dr. Tami Clare, Portland State University, Department of Chemistry.

### Membership in Professional Societies

- Member of the Hellenic Archaeometry Group
- Member of the Italian Vacuum Association –AIV and the International Union for Vacuum Science, Technique, and Applications (IUVSTA)
- Member of the SAS (Society of Archaeological Sciences)
- Member, Materials Research Society (MRS)
- Member, American Chemical Society
- Member of American Schools of Oriental Research (ASOR)

### University Committee Service

- 2011-Chair, UCLA/Getty Conservation IDP
- 2014: Vice Chair, Graduate Council. Academic Senate.
- 2014: Co-Chair, of the Graduate Certificates Workgroup. Academic Senate.
- 2014: Member, Graduate Council Review Committee (Chemical and Biomolecular Engineering).
- 2015: Chair, Graduate Council Review Committee (African Studies IDP)
- Member of the Committee to Administer the Archaeology IDP and Admissions Committee Member.
- Chair and member of the Admissions Committee of the UCLA/Getty Conservation Program.
- Chair of Ph.D., M.S. and M.A. committees (Materials Science and Engineering Department, Conservation and Archeology IDP)
  - Xiao Ma, PhD Candidate, Materials Science and Engineering Department
  - Yuan Lin, PhD Candidate, Materials Science and Engineering Department
  - Roxanne Radpour, PhD Candidate, Materials Science and Engineering Department
  - Krystal Cunningham, PhD Candidate, Materials Science and Engineering Department
  - Carolyn Carta, PhD Candidate, Materials Science and Engineering Department
  - Karime Castillo, PhD Candidate, Archaeology IDP
  - Haroula Kyriakou, MS Candidate, Materials Science and Engineering Department
  - Lindsey Perry, MS Candidate, Materials Science and Engineering Department
  - Elizabeth Burr, MA Candidate, Conservation IDP
  - William Shelley, MA Candidate, Conservation IDP

- Colette Khanaferov, MA Candidate, Conservation IDP
- PhD Committee Member (acting as UCLA ‘external’) of Eleanor Demis, Chemistry Department. June 2015.

### Teaching

#### Fall 2014

- ARCHAEOLOGY 596: Individual Studies Grad 596 (1 student)
- CAEM 264: Structure, Properties and Deterioration of Materials: Rock Art, Wall Paintings, Mosaics
- CAEM 290: Internship (3 students)
- CAEM 596: Independent Study (1 student)
- MAT SCI 199: Directed Research (2 students)
- MAT SCI 296: Seminar: Advanced Topics in Materials Science and Engineering (6 officially enrolled, 8 unofficially attending)
- MAT SCI 597B: Prep PhD Prelim Exam (3 students)
- MAT SCI 599: Research Dissertation (1 student)

#### Winter 2015

- CAEM M250/ MAT SCI M215: Conservation Laboratory: Rock art, Wall Paintings and Mosaics
- CAEM 598: MA Paper Preparation (4 students)
- MAT SCI 199: Directed Research (4 students)
- MAT SCI 296: Seminar: Advanced Topics in Materials Science and Engineering (6 officially enrolled, 8 unofficially attending)
- MAT SCI 597B: Prep PhD Prelim Exam (4 students)
- MAT SCI 599: Research Dissertation (1 student)

#### Spring 2015

- CAEM 598: MA Paper Preparation (3 students)
- MAT SCI 199: Directed Research (1 student)
- MAT SCI 296: Seminar: Advanced Topics in Materials Science and Engineering (6 officially enrolled, 8 unofficially attending)
- MAT SCI 596: Directed Individual Study (1 student)
- MAT SCI 597B: Prep PhD Prelim Exam (2 students)
- MAT SCI 597C: (Prep. PhD Qualifying Exam 2 students)
- MAT SCI 599: Research Dissertation (1 student)

## Vanessa Muros

### Publications 2014-15

- 2014 Muros, V. Conservation at the Lofkënd Archaeological Project, 2004-2008. In: Papadopoulos, J.K., S.P. Morris, L. Bejko and L. Schepartz. *The excavation of the prehistoric burial tumulus at Lofkënd, Albania, Vol. 1 and 2*. Los Angeles: Cotsen Institute of Archaeology Press, 122-138 (Vol. 1-text) and 915-921 (Vol. 2-illustrations).
- 2014 Muros, V. Textiles and other mineralized organic remains at Lofkënd. In: Papadopoulos, J.K., S.P. Morris, L. Bejko and L. Schepartz. *The excavation of the prehistoric burial tumulus at Lofkënd, Albania, Vol. 1 and 2*. Los Angeles: Cotsen Institute of Archaeology Press, 411-424 (Vol. 1-text) and 1043-1057 (Vol. 2-illustrations)
- 2014 Muros, V. and D.A. Scott. Analytical studies of the metal artifacts from Lofkënd. In: Papadopoulos, J.K., S.P. Morris, L. Bejko and L. Schepartz. *The excavation of the prehistoric burial tumulus at Lofkënd, Albania, Vol. 1 and 2*. Los Angeles: Cotsen Institute of Archaeology Press, 389-410 (Vol. 1-text) and 1033-1042 (Vol. 2-illustrations)
- 2014 Papadopoulos, J.K. and V. Muros. Beads of faience and glass. In: Papadopoulos, J.K., S.P. Morris, L. Bejko and L. Schepartz. *The excavation of the prehistoric burial tumulus at Lofkënd, Albania, Vol. 1 and 2*. Los Angeles: Cotsen Institute of Archaeology Press, 371-375 (Vol. 1-text) and 1024-1025 (Vol. 2-illustrations)
- 2014, Prikhodko, Sergey V., Diana C. Rambaldi, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli. "Interfaced SEM and micro-Raman Spectroscopy for SERS Analysis of Dyes on Single Fibers." *Microscopy and Microanalysis* 20, no. S3: 2008-2009. <http://dx.doi.org/10.1017/S1431927614011775>
- 2015, Prikhodko, Sergey V., Diana C. Rambaldi, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli. "New advancements in SERS dye detection using interfaced SEM and Raman spectromicroscopy ( $\mu$ RS)." *Journal of Raman Spectroscopy*. DOI: 10.1002/jrs.4710

### Awards and Honors

- Non-Senate Faculty Professional development award towards travel to Greece to conduct research on archaeological glass.
- Kittredge Fund to support analysis of glass samples (from Methone and Kefalonia)

### Invited Lectures and Conference Presentations

- 2015 Muros, V., N. Zacharias, W. Shelley and I. Kakoulli. The technology and trade of glass in SE Europe: Analysis of 12th-9th c. BC glass from Lofkënd and Methone. Society for American Archaeology 80th Annual Meeting, April 15-19, 2015. San Francisco, CA.
- 2014 Muros, V. What lies beneath: Analytical studies of bronze and glass artifacts from the prehistoric tumulus at

Lofkënd. Western Association for Art Conservation Annual Meeting, Sept. 8-11, 2014, San Francisco, CA

### Professional Activities

- Member, Objects Specialty Group (OSG) Wiki Committee, American Institute for the Conservation of Historic and Artistic Works (AIC). ([www.conservation-wiki.com/index.php?title=Objects](http://www.conservation-wiki.com/index.php?title=Objects)).
- Contributor, "Conservators Converse" blog, official blog of the American Institute for the Conservation of Historic and Artistic Works (AIC). Write posts reviewing sessions at various conservation conferences. (<http://www.conservators-converse.org/>).
- Editor, Society for Archaeological Sciences (SAS) Bulletin
- E-editor for conference publications, Association of North American Programs in Conservation (ANAGPIC)
- Head conservator, Methone Archaeological Project (August 2014)

### Membership in Professional Societies

- American Institute for Conservation of Historic and Artistic Works.
- International Institute for Conservation of Historic and Artistic Works.
- Society for American Archaeology.
- Society for California Archaeology
- Western Association for Art Conservation

### Teaching

Spring 2015

CAEM C120/C220 Readiness, Response and Recovery: Field Methods of Archaeological Conservation

CAEM 296 (2 students)

# Ellen Pearlstein

## Publications 2014-15

### Invited book chapters

1. Clavir, Miriam and Pearlstein, Ellen. Museum Conservation, *International Encyclopedia of Anthropology*, edited by Hilary Callan, Hoboken, NJ: John Wiley & Sons (in press).
2. Pearlstein, E., 2015, Displaying feathers, what history tells us, in *Images Take Flight; Feather Art in Mexico and Europe*, edited by Alessandra Russo, Gerhard Wolf, Diana Fane, Chicago: University of Chicago Press in collaboration with the Kunsthistorisches Institut-Max-Planck Institut in Florence and the Museo Nacional de Arte (MUNAL) in Mexico City (in press).
3. Pearlstein, E., Mark Mac Kenzie, Emily Kaplan, Ellen Howe, Judith Levinson 2015, Cochineal: meaning and matter in Andean qeros, in *A Red Like No Other: How Cochineal Colored the World*, edited by Carmella Padilla and Barbara Anderson (Rizzoli, 2015), Rizzoli, NY and Museum of International Folk Art, Santa Fe, New Mexico.
4. Pearlstein, E. 2015, Restoring Provenance to an American Indian Feathered Blanket in Preserving our Heritage: *Perspectives from Antiquity to the Digital Age*, edited by Michele Valerie Cloonan, Chicago: ALA Neal-Schuman, 555-565.

### Peer reviewed papers and conference proceedings

5. Pearlstein, E., 2015, Conserving ourselves; embedding significance into conservation decision-making in graduate education, *Studies in Conservation* (in review).
6. Robin O'Hern, Ellen Pearlstein and Susan Elizabeth Gagliardi, 2014, Beyond the Surface: Where Cultural Contexts and Scientific Analyses Meet in the Conservation of Komo Helmet Masks in *Museum Collections*, *Museum Anthropology*, (in review).
7. Pearlstein, E., Melissa Hughs, Joy Mazurek, Christel Pesme, Renée Riedler, Molly Gleeson 2015, Ultraviolet induced visible fluorescence and chemical analysis as tools for examining featherwork, *Journal of the Institute of Conservation* (in press).
8. Pearlstein, E., M. Hughs, J. Mazurek, K. McGraw, C. Pesme, and M. Garcia-Garibay, 2014, Correlations between photochemical damage and UV fluorescence of feathers, ICOM-CC 17th Triennial Conference, Melbourne, Australia September 15-19, 2014, Preprints, 1-8.
9. Riedler, R., C. Pesme, J. Druzik, M. Gleeson, and E. Pearlstein, 2014, A review of color producing mechanisms in feathers and their influence on preventive conservation strategies, *Journal of the American Institute for Conservation*, 53:1, 44-65.

## Invited Lectures and Conference Presentations

### Invited presentations

1. "Ethnographic and its implications for museum conservation", November 13, 2014, 1-4pm, Guest lecture in class at Emory University entitled Issues in the

Conservation of Art and Cultural Property, Prof. Renee Stein.

2. "Conservation conversation", November 13, 2014, Carlos Museum at Emory University, Conservators Robin O'Hern and Ellen Pearlstein, and art historian Susan Gagliardi, discuss ethical issues related to conserving African art objects in a lecture titled Beyond the Surface: Where Secrecy, Science, and Ethics Meet.
3. "Significance and preservation of color in featherwork", November 14, 2014, Guest lecture for graduate Art History students and faculty, Emory University.
4. "Feathers and Exhibitions: Lighting for the Birds", February 12, 2015, MacMillan Education Center, Smithsonian Museum of American Art.
5. "...what happens after university coursework is completed", Arts and Cultural Heritage Workshop; exploring conservation education in South Africa, Andrew W. Mellon Foundation, Pretoria, South Africa, March 1 - 3, 2015.
6. "Defining conservation", Conservation of Indigenous Collections Seminars, Indian Arts Research Center (IARC) at the School for Advanced Research (SAR), April 2015

### Juried presentations

7. Pearlstein, E., M. Hughs, J. Mazurek, K. McGraw, C. Pesme, and M. Garcia-Garibay, 2014, "Correlations between photochemical damage and UV fluorescence of feathers", ICOM-CC 17th Triennial Conference, Melbourne, Australia September 15-19, 2014.

## Professional Activities & Committees

### Professional Activities

- Invited delegate, Arts and Cultural Heritage Workshop; exploring conservation education in South Africa, Andrew W. Mellon Foundation, Pretoria, South Africa, March 1 - 3, 2015
- Invited delegate, Conservation of Indigenous Collections Seminars, Indian Arts Research Center (IARC) at the School for Advanced Research (SAR), April 2015
- Chair, American Institute for Conservation Nominating Committee, through June 1, 2015
- Associate Editor, *Journal of the American Institute for Conservation*
- Research proposal reviewer, Federal Department of Economic Affairs, Education and Research EAER State Secretariat for Education, Research and Innovation (SERI), European Cooperation in Science and Technology (COST), Switzerland
- Jury Member, College Art Association/Heritage Preservation Award, 2013-2015
- Vice-President, Association of North American Graduate programs in Conservation

## Professional Activities (continued)

- Invited conservation assessment: Assessment of the Tupinambá feathered cape, Museo Ambrosiana, Milan, December 2014, Invited by Marina Pugliese, Direttore Servizio Polo Arte Moderna e Contemporanea, Milan.
- Unsalariated conservation activity: Conservation of featherwork, July 2014, Hibulb Cultural Center, Tulalip Reservation, Washington.
- Doctoral examiner and viva for Renata Peters, Conservation as a champion for South American indigenous minorities' aspirations University of College London, December 7, 2014
- May 2015, Yosemite Museum, National Park Service Cooperative Agreement, wrote proposal in support of students in CAEM and IS to work under my supervision on collections during summers 2016, 2017.

## Membership in Professional Societies

- Fellow, American Institute for Conservation Member, International Council of Museums, Conservation Committee Member, Objects from Indigenous and World Cultures Working Group, ICOM-CC

## University Committee Service

- Core Faculty Member, UCLA/Getty Program in the Conservation of Archaeological and Ethnographic Materials
- Core Faculty Member, Cotsen Institute for Archaeology
- Admissions Committee, UCLA/Getty Program in the Conservation of Archaeological and Ethnographic Materials
- Doctoral Program Committee, Information Studies
- Chair of MA Committees:
  - Lesley Day, Conservation IDP
  - Alex Kosztowny, MLIS
  - Heather White, Conservation IDP

## Teaching

Fall 2014

CAEM 240/IS 238 Environmental Protections for Museums, Libraries and Archives

CAEM 232 Deterioration and Conservation of Organic Materials I

CAEM 290 Internship

CAEM 596 Independent study

IS 497 Fieldwork

Winter 2015

CAEM 238 Deterioration and Conservation of Organic Materials II

CAEM 596 Independent Study

IS 596 Independent study

ARCH 596 Independent study

CAEM 598 Thesis preparation

Spring 20154

CAEM 241 Deterioration and Conservation of Organic Materials III

IS 432 Issues in the Preservation of Heritage Materials

CAEM 596 Independent Study

IS 596 Independent study

ARCH 596 Independent study

CAEM 598 Thesis preparation

Other Teaching and Supervision:

July 2014, Hibulb Cultural Center, Tulalip Reservation, Washington, mentored CAEM student and arranged subsistence and stipend support.

# David A. Scott

## Publications 2014-15

1. Scott, David A. 2016 Copper and Bronze in Art: Corrosion, Colorants, Conservation. Czech Translation of 2002 Book issued by the Getty Press.
2. Scott, David A. 2016 Sampleite, Paratacamite and Connellite as corrosion products of ancient bronze alloys. *Studies in Conservation* (in preparation)
3. Kaufman, Brett and Scott, David A. 2015 Fuel efficiency of ancient copper alloys: theoretical melting thermodynamics of copper, tin and arsenical copper and timber conservation in the Bronze Age Levant. *Archaeometry* 57 234-256
4. Scott, David A. 2015 Art and Authenticity: Perspectives and Persuasions. *Studies in Conservation* 60 (in press).
5. Liang, Jiafang and Scott, David A. 2015 Ancient green copper pigments from Egypt: identification and alteration. *Studies in Conservation* 60 23-36.
6. Scott, David A. 2015 A Review of Ancient Egyptian Pigments. *Studies in Conservation* 60 (in press).
7. Embree, Carolyn and Scott, David A. 2015 Four Cases of French Fakes. *Journal of Art Crime* 11 (in press).
8. Muros, Vanessa and Scott, David A.. 2015 Analytical studies of the metal objects from Lofkend, Chapter 11, 389-424. In: (Ed. John K. Papadopoulos, Sarah P. Morris, Lorenc Bejko and Lynne A. Schepartz) *The Excavation of the Prehistoric Burial Tumulus at Lofkend, Albania. Monumenta Archaeologica* 34. Cotsen Institute of Archaeology Press. UCLA: Los Angeles.
9. Scott, David A.. 2015 Art: Authenticity, Restoration and Forgery (In press)
10. Scott, David A. 2014 Metallography and microstructure of metallic materials. 134-156 In: (Ed. Benjamin Roberts and Christopher Thornton) *Archaeometallurgy in Global Perspective: Methods and Syntheses*. Springer Verlag: Amsterdam.
11. Scott, David A. 2014 The use of metallographic and metallurgical investigation methods in the preservation of metallic heritage artefacts. In: (Ed. P. Dillmann, D. Watkinson, E. Angelini and A. Adriaens) *Corrosion and Conservation of Cultural Heritage Metallic Artefacts* 82-100. *European Federation of Corrosion Publications* 65. Woodhead Publishing: Oxford.
12. Ma, Qinling and Scott, David A. 2014 Research on the Technology of the Western Zhou Dynasty Tinned Ge-Dagger Axes unearthed at Baicaopo Village, Lingtai County, Gansu Province. *Wenwu, Chinese Cultural Relics, Quarterly Journal*. 4 85-96.
13. Scott, David A. 2014 Review of "Art and Authenticity" *Studies in Conservation* 59 120-125.
2. 2014 Lecturer, UCL Department of Mechanical Engineering. Ancient Metals and Their Microstructures. Week-long intensive laboratory and theoretical work. August 2014.
3. 2014 Lecture, University College London, entitled "Modern Antiquities: The Looted and the Faked".
4. 2015 Lecture (Pizza Talk) at the Cotsen Institute of Archaeology, February 2015, entitled: From the Getty Kouros to Manitou Springs: The Consolation and Consequences of Inauthentic Archaeologies.
5. 2015 University College, London, Department of Art History, entitled: Art and Authenticity: The Problems of Restoration and Forgery. May 2015

## Awards & Honors

- Awarded a Guggenheim Fellowship to work on the book project: "Art: Authenticity, Restoration, Forgery,". The text of this book was completed in January 2015, after a year of work. Discussions with a number of publishers are underway, and the Getty Press is interested and has sent the volume out for outside review already.

## Professional Activities & Committees

### Membership in Professional Societies

- Fellow of the International Institute for Conservation of Historic and Artistic Works (FIIC 1989-present)
- Fellow of the Royal Society of Chemistry (FRSC 1993-present)
- Fellow of the Royal Anthropological Institute (1985-1992) serve as a voting member of the Department of Art History and serve as the Department of Art History representative on the Legislative Assembly meetings. Served on merit review cases for Professor Lothar von Falkenhausen and Associate Professor George Baker's promotion.

### University Committee Service

- Member of the core faculty of the IDP in Archaeological and Ethnographic Conservation.
- Core member of the IDP in Archaeology at the Cotsen Institute of Archaeology.
- Founding Director and Chair of the UCLA/Getty Conservation Program, 2003-2011. This latter position constitutes my major contribution to service work, outside of teaching.

### Teaching

Winter 2015

CAEM 239 Conservation Laboratory: Metals II

*On sabbatical Spring 2015*

## Invited Lectures and Conference Presentations

1. 2014 Lecture, University of Southern California, Archaeological Research Center, entitled: Ancient Sculpture and Authenticity.