

FORTH Foundation for Research and Technology - Hellas
IESL Institute of Electronic Structure and Laser



June 27–July 02, 2016

2016 OPTO-CH training workshop

www.optoch2016workshop.iesl.forth.gr

**Laser technologies for
Cultural Heritage
analysis, diagnostics
and
conservation**

The **aim** of the OPTO-CH 2016 training workshop is to introduce participants to applications of advanced laser technologies in Cultural Heritage (CH) science, diagnostics and conservation. Lectures from experts on modern laser diagnostic, analytical techniques and cleaning methodologies are combined with practical demonstrations and laboratory hands-on sessions. Two days of field tests and experiments on-site at selected monument in Crete are also foreseen.





OPTO-CH 2016 workshop

June 27– July 02, 2016

Laser technologies for Cultural Heritage analysis, diagnostics and conservation

IESL-FORTH Heraklion, Crete, Greece

Join us for an exciting journey to Crete to become acquainted with the latest developments on non-invasive optical technologies and explore their field applications in Cultural Heritage conservation

What Does it Cover?

OPTO-CH 2016 training workshop combines lectures from experts on modern laser diagnostic and analytical techniques, as well as, laser conservation methodologies, with practical demonstrations and laboratory hands-on sessions. Two days of field tests and experiments on-site at selected monuments in Crete are also foreseen. The topics covered include:

- Materials analysis with Laser Spectroscopy (LIBS, Raman)
- Optical Coherence Metrology for Structural Diagnosis
- Imaging and Mapping; multispectral, multi-photon and THz
- Laser Cleaning

What Will You Learn?

- The general concepts & principles of operation for each technique with emphasis on their analytical & diagnostic potential
- How optical and laser technologies can be used in CH conservation on the basis of discussion on selected examples & case studies
- How these techniques have been introduced to the conservation practice at world heritage sites & monuments in Greece
- You will experience the capacities of the technologies presented in the lab (identification & characterization of pigments, salts, rocks, metals, mortars, wall paintings, adhesion cases, etc) through field tests and experiments on-site.

Who Should Attend?

- ✓ Graduate students (or Undergraduate Seniors)
- ✓ Young Researchers in Cultural Heritage and Conservation Science
- ✓ Professionals in Cultural Heritage

OPTO-CH 2016 Workshop

**June 27 - July 02
2016**

Applications deadline
March 11, 2016

Notice of acceptance
March 18, 2016

For info related to fees & registration please check the workshop's homepage

Certificates of attendance will be given to all participants

Contact

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WORKSHOP TENTATIVE OUTLINE

Days 1-4 Intro, Basics and Lab sessions

DAY 1 Historic, cultural and monumental context. Conservation considerations in Cultural Heritage research.
Materials context
Materials and finishes with emphasis in the Eastern Mediterranean Cultural landscape. Chemistry and physics of color and surface morphology.
Participants presentations
Optics and Imaging (the seen and the unseen)
Basic optics and imaging physics, Multi-spectral imaging, Case studies, Practical session on imaging.

DAY 2 **Laboratory and Laser Safety**
Laser Spectroscopy for material analysis
Elemental Analysis by LIBS , LIBS basics, Case studies, Practical session.
Molecular Analysis by Raman microscopy, Raman basics, Case studies, Practical session.

DAY 3 **Holographic interferometry**
Holography and interferometry basics, Case studies, Practical session.
Special Lectures
Visit at the Archaeological Museum of Heraklion

DAY 4 **Laser conservation**
Basics of laser ablation removal of materials, Case studies, Practical session. Demonstration of laser cleaning
Special lectures
Wrap up and conclusions
Overview of site visit
Visit at Knossos archaeological site

Days 5-6 Work on-site

DAY 5 **Site context, meaning and values**
Campaign planning, Dividing problems based on materials and pathologies. Assembling working groups
Setting up of equipment and documentation workstations.
Working on site and data interpretations .

DAY 6 **Working on site and data interpretations,**
Interaction with the staff of the Ephorate of Antiquities of Heraklion.
Campaign overview. Conclusions. What we learned. Return to Heraklion.



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