«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
TO PAY A PERMANENT TRIBUTE TO GALILEO GALILEI, FOUNDER OF MODERN SCIENCE AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES

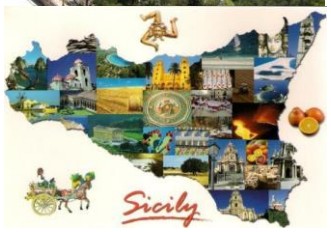
INTERNATIONAL SCHOOL OF QUANTUM ELECTRONICS

64TH COURSE: PROGRESS IN PHOTOACOUSTIC AND PHOTOTHERMAL PHENOMENA: FOCUS ON BIOMEDICAL, NANOSCALE, NDE, GAS SENSING, AND THERMOPHYSICAL PHENOMENA AND TECHNOLOGIES

ERICE-SICILY: OCTOBER 16-23, 2021

Directors of the Workshop: R. LI VOTI and A. MANDELIS
Sponsored by: • Sicilian Regional Government, Sapienza Università di Roma, Department SBAI





PURPOSE OF THE WORKSHOP

The aim of the workshop is to bring together all scientists, technology developers and technology users who are investigating or exploiting optically and electromagnetically excited acoustical and thermal phenomena for the investigation of a large variety of material properties and applications. The wealth of photoacoustic and photothermal (PA/PT) topics indicate that this field has developed a broad range of tools for fundamental and applied research. PA/PT research has reached a mature state, with an established position in measurement technology and materials characterisation and future progresses are guaranteed by the close synergy with advances in laser and measurement technology. This sixth workshop acknowledges the explosive growth of biomedical photoacoustics and tissue imaging, and the presence of an ever growing biomedical photoacoustics research community around the world and in Europe, in particular. It also acknowledges the significant and growing contributions of photoacoustic and photothermal non-destructive evaluation / characterization to nanoscale and other advanced materials (with connections to biomedical imaging by use of nanoparticles). Participants are encouraged to present their own results in the field. In addition, students and newcomers to the field will have the opportunity to attend the Summer School, which will run in parallel with the workshop.

LOCATION & HISTORY

The conference site is the «Ettore Majorana» Foundation and Centre for Scientific Culture (EMFCSC) in Erice – Italy (see http://www.ccsem.infn.it/) EMCFSC has a long tradition in the organization of Schools, Workshops and International Conferences, covering all branches of Science. EMCFSC is situated in the old pre-mediaeval city of Erice where 3 monasteries (one of which was the residence of the Viceroy of Sicily during the XIV and XV Centuries) provide an appropriate setting for high intellectual endeavor.

Erice is a historic town in Sicily, Italy. It is located on top of Mount Erice, at around 750m above sea level, overlooking the city of Trapani, the low western coast towards Marsala the dramatic Punta del Saraceno and Capo san Vito to the north-east, and the Aegadian Islands on Sicily's north-western coast.

In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighborhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo. Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Cornino, and a wild and rocky coast around Monte Cofano.

SESSIONS & TOPICS

The workshop covers "hot" topics that are grouped into five thematic sessions:

Session A : **Biomedical and Biological PA & PT (A.Mandelis)**
1. Instrumentation design, software and signal generation techniques for biomedical photoacoustics and imaging.
2. Clinical applications of biomedical photoacoustics
3. Microscopy, spectroscopy and endoscopy
4. Animal imaging
5. Dyes, nanoparticles and other contrast agents
6. Biothermophotonics and biomedical photothermal methodologies
7. Biological photoacoustics and photothermics
8. Biosensors

Session B : **Nanoscale Heat Transfer and Imaging (S.Volz and G.Tessier)**
9. Ultrafast thermoelastic phenomena
10. Thermal and elastic properties on the nanoscale
11. Picosecond and other ultrafast photoacoustics
12. Phonon Transport - Phononics

Session C:Non Destructive Evaluation & Testing (C.Glorieux X.Maldague)
13. Infrared Thermography and Thermophotonic Imaging
14. Non-destructive testing and industrial applications
15. Depth profiling of materials and inverse problems
16. Environmental sensors, robotics and machine learning, new instrumentation and methodology

Session D: Thermophysical and Diffusion-Wave Properties (R.Li Voti and A.Mandelis)
17. Complex fluids, phase transitions and glass transitions
18. Spectroscopy, analytical chemistry, nonlinear optics and photochemistry
19. Thermophysical and thermodynamic properties using PA & PT
20. Semiconductors, Photovoltaics, MEMS, NEMS

Session E: Gas Sensing, Spectroscopy & novel laser sources (V. Spagnolo and F.Tittel)
21. Photoacoustic and photothermal gas sensing
22. Mid-IR sources for gas sensing
23. Particulate sensing
24. Industrial applications

WORKSHOP FEE

The Workshop fee is **1000** Euro for each participant. It covers:
1. Registration to the Workshop
2. Accommodation (for the whole period October 16-23, 2021)
3. All meals (for the whole period October 16-23, 2021)
4. Social Dinner
5. Transfer to and from the local Airports (Trapani or Palermo).

Both Trapani and Palermo Airports are served by main flight companies.

INTERNATIONAL SUMMER SCHOOL: Basic Photothermal and Photoacoustic Techniques: Theory, Instrumentation and Applications, will be organized in parallel with the Workshop for students and beginners in the field, **with no additional fee**. The Summer School is organised in collaboration with the Graduate School of the University of Nova Gorica and will offer a transfer of 10 ECTS credit points to participating students.

FURTHER DETAILS and APPLICATION

All information about the Workshop and the Summer School can be found soon on the website http://www.sbai.uniroma1.it/conferenze/photoacoustic-photothermal/ In order to submit the application to attend the Workshop and the Summer School, you are kindly asked to send a short email not later than July 4th , 2021 to the conference Secretariat at

Roberto LI VOTI
Sapienza Università di Roma - Dipartimento SBAI
e-mail: WorkshopErice@uniroma1.it

In the email you are kindly asked to write the following info:
1) Name and affiliation of the participant
2) Option: poster presentation, oral presentation, none of them.