



“ETTORE MAJORANA” FOUNDATION and CENTRE FOR SCIENTIFIC CULTURE
INTERNATIONAL SCHOOL OF QUANTUM ELECTRONICS

48th Course: *FIRST MEDITERRANEAN INTERNATIONAL WORKSHOP ON
PHOTOACOUSTIC & PHOTOTHERMAL PHENOMENA*

ERICE-SICILY: 11 – 18 JULY 2010

Timetable of the Workshop

Sunday 11st July :

noon onwards: **Arrivals & Registration**

Lunch & Dinner: **Local Restaurants**

After Dinner: **Welcome Party** – *Piano Room San Rocco*

Monday 12nd July :

Morning Session I: Foundations and Techniques
San Francesco Lecture Hall

Chairperson: **S.Martellucci**

9.00 – 9.10 Opening by **A. Mandelis** and **R. Li Voti**

9.15 – 10.10 **G. Busse** – IKT – Germany

NDE using thermal waves: From photoacoustics to Lockin imaging methods

10.15 – 11.10 **M.Chirtoc** - Uni de Reims – France

Thermal-wave microscopy with resistive and thermocouple probes

11.15 – 11.25 *Coffee Break – San Francesco Cloister*

Chairperson: **M.Chirtoc**

11.30 – 12.25 **D. Fournier** - Pierre et Marie Curie - France

Heat diffusion in layered samples : 3 omega and thermoreflectance methods

Afternoon Session II - Foundations and Techniques
San Francesco Lecture Hall

Chairperson: **G.Busse**

3.30 – 4.25 **G. Diebold** – Brown University - USA

Photoacoustic effect in phononic structures, and chemically reacting systems

4.30 – 4.55 **J. Morikawa** – Tokyo Institute of Technology - JAPAN

Thermal wave in a pulsed laser scanning system observed by a micro-scale thermography

5.00 – 5.25 **V. Gusev** - Université du Maine - France

Spectral transformation functions of acousto-optic conversion in picosecond laser ultrasonics

5.30 – 5.40 *Coffee Break – San Francesco Cloister*

Chairperson: **A.Mandelis**

- 5:45 – 6.40 **S. Telenkov** - University of Toronto – Canada
Photoacoustic sonar: principles of operation and imaging
- 6.45 -7.00 **Poster Flash Presentation:** the contents and main conclusions of each poster will
be briefly presented by its authors
- 7.00 – 9.00 *Local Restaurants*
- 9.00 – 11.30 *Poster Discussion*
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Tuesday 13rd July :

Morning Session III: Biological, Dental and Medical applications
San Francesco Lecture Hall

Chairperson: **J.J. Alvarado Gil**

- 9.15 – 10.10 **B. Majaron** – Ljubljana - Slovenia
Photothermal temperature profiling and imaging in biomedicine
- 10.15 – 11.10 **G.Paltauf** - Karl-Franzens Universität Graz - Austria
*Three-dimensional photoacoustic tomography
of small biological objects with optical detection*
- 11.15 – 11.25 *Coffee Break – San Francesco Cloister*

Chairperson: **G. Diebold**

- 11.30 - 12.25 **A.Mandelis** - University of Toronto – Canada
*Dental Thermophotonics : Dental caries diagnostic imaging
and depth profiling in clinical dentistry*

Afternoon Session IV - Biological, Dental and Medical applications
San Francesco Lecture Hall

Chairperson: **D. Fournier**

- 3.30 - 4.25 **J.J.Alvarado-Gil** – CINVESTAV IPN - Mexico
Photothermal study of dental and smart materials
- 4.30 – 5.25 **Y. Wang** – Karlsruhe - Germany
*Analytical methods for characterizing skin penetration
based on non-invasive spectroscopy*
- 5.30 – 5.40 *Coffee Break – San Francesco Cloister*

Joint Section with Course 47th :

50 Years of Laser: Event of Società Italiana di Ottica e Fotonica (SIOF)

Chairperson: **M.Bertolotti**

- 5.45 – 7.00 **A.Zheltikov** – Moscow State University - Russia
*Laser and ultrafast science: from early-day time-resolved
laser techniques to attosecond nano*
- 7.00 – 9.00 *Local Restaurants*
- 9.00 – 11.30 *Poster Discussion and more*
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Wednesday 14th July :

Morning Session V: Inverse problems applied to non-homogeneous materials
San Francesco Lecture Hall

Chairperson: **R. Li Voti**

- 9.15 – 10.10 **C. Glorieux** – Katholieke Universiteit Leuven – Belgium
*Photothermal and photoacoustic characterization of material structures in
transient and periodic mode: from mm to sub-micrometer resolution in 3D.*
- 10.15 – 11.10 **C.Wang** – Suzhou University, Suzhou, Jiangsu Province - P. R. China
*Photothermal characterization of curved inhomogeneous solids
based on Green function method*
- 11.15 – 11.25 *Coffee Break – San Francesco Cloister*

Chairperson: **V.E. Gusev**

- 11.30 – 11.55 **R. Li Voti** - Sapienza Università di Roma – Italy
Photothermal Depth Profiling on Vanadium Dioxide Photonic Crystals
- 12.00 – 12.25 **A. Mandelis** - University of Toronto – Canada
*Dynamic Photophysical Processes in Laser Irradiated Human Cortical Skull Bone
Measured by Means of Modulated Luminescence and Infrared Photothermal
Radiometry*
- Afternoon *Excursion to S. Vito lo Capo*
- 7.00 – 9.00 *Local Restaurants*
- 9.00 – 11.30 *Poster Discussion and more*
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Thursday 15th July :

Morning Session VI: Joint Section with Course 47th

50 Years of Laser: Event of Società Italiana di Ottica e Fotonica (SIOF)

San Domenico Lecture Hall

Chairperson: **S. Martellucci**

9.00 - 10.30 **M. Bertolotti** – Sapienza Università di Roma – Italy
Some hystorical remembering

10.30 – 10.55 *Coffee Break*

Chairperson: **A. Mandelis**

11.00 – 12.30 **O.B. Wright** – Hokkaido University – Japan
Filming ripples on phononic crystals

***Afternoon Session VII - Heat transfer at nanoscale and ultrafast phenomena
Lecture Hall***

Chairperson: **C.Glorieux**

3.30 – 4.25 **S. Volz** - CNRS – France
Heat Conduction at the Nanoscale: State of the Art and Challenge

4.30 – 5.25 **V. E. Gusev** – Université du Maine – France
Generation and detection of acoustic phonons by femtosecond lasers

5.30 – 5.40 *Coffee Break*

Joint Section with Course 47th :

50 Years of Laser: Event of Società Italiana di Ottica e Fotonica (SIOF)

San Domenico Lecture Hall

Chairperson: **M.Bertolotti**

5.45 – 7.00 **L. Palumbo** - Sapienza Università di Roma – Italy
Pushing the laser to extreme: prospective of short wavelength FEL

7.30 – 9.00 *Social Dinner*

9.00 – 11.30 *Poster Discussion and more*

Friday 16th July :

Morning Session VIII: Liquid crystals – semiconductors
San Francesco Lecture Hall

Chairperson: **A.Mandelis**

- 9.15 – 10.10 **C. Glorieux** – Katholieke Universiteit Leuven – Belgium
Dynamics of specific heat and other relaxation processes in super cooled liquids from impulsive stimulated scattering data
- 10.15 – 11.10 **M. Marinelli** – University of Roma Tor Vergata – Italy
Photothermal calorimetry for the study of glassy behavior in confined liquid crystals
- 11.15 – 11.25 *Coffee Break – San Francesco Cloister*

Chairperson: **G.Busse**

- 11.30 - 12.25 **Bincheng Li** - Chinese Academy of Sciences – China
Optical and photo-carrier characterization of semiconductor wafers

Afternoon Session IX: Liquid crystals – semiconductors
San Francesco Lecture Hall

Chairperson: **E.Correa**

- 3.30 – 4.25 **M. Franko** – University of Nova Gorica - Slovenia
Thermal lens spectrometry and recent progress in environmental analysis
- 4.30 – 4.55 **G. Busse** – IKT – Germany
Lock-in interferometric imaging of thermal waves for NDE
- 5.00 – 5.25 space for oral presentation
- 5.30 – 5.40 *Coffee Break – San Francesco Cloister*

Chairperson: **J.J. Alvarado Gil**

- 5.45 -6.40 **O.B. Wright** – Hokkaido University – Japan
Picosecond laser ultrasonics from all angles
- 7.00 – 9.00 *Local Restaurant*
- 9.00 – 11.30 *Farewell Party and more*
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Saturday 17th July :

Morning Session X: Miscellaneous of Photoacoustic and Photothermal techniques
San Francesco Lecture Hall

Chairperson: **A. Oleaga**

9.15 – 9.45 **R. Li Voti** – Sapienza Università di Roma -Italy
Nanoscale heat transfer in synthetic opals

9.50 – 10.20 **G.Diebold** – Brown University, USA
Chemical Photoacoustic effect

11.15 – 11.25 *Coffee Break – San Francesco Cloister*

Chairperson: **M. Franco**

11.30 – 12.25 *Presentation of the next 16th International Conference on*
Photoacoustic & Photothermal Phenomena
in Mérida, Yucatán, México November 2011

Afternoon Session XI: Conclusions
San Francesco Lecture Hall

Chairperson: **R. Li Voti**

3.30 – 4.25 **Round Table**

4.30 – 5.30 **Concluding Remark**

7.00 – 9.00 **Local Restaurant**

Sunday 18th July :

noon onwards: **Departures**

Lunch & Dinner: **Local Restaurants**

Posters to be presented

1. Zilong Hua, Changhu Xing, **Heng Ban**^{*}
Thermal Effusivity of SiC, ZrC, and Al Alloy by Photothermal Reflectance Technique
Department of Mechanical and Aerospace Engineering,
Utah State University, Logan, Utah, USA
2. **E. C. da Silva**^{*}, F. A. L. Machado, E. B. Zanelato and A. O. Guimarães
Photopyroelectric methodology applied in the characterization of biofuels
Laboratório de Ciências Físicas, Universidade Estadual do Norte Fluminense,
Campos dos Goytacazes - RJ, Brazil
3. **Marlena Gauza**^{*}, Leszek Kubisz
Electrical conductivity of fish skin collagen and bovine Achilles tendon collagen in the temperature range 290- 510K
Department of Biophysics, University of Medical Sciences Poznan, Poland
4. R. Rico Molina^{(a)*}, **C. Hernández Aguilar**^(a,b), **A. Domínguez Pacheco**^(a,b),
A. Cruz-Orea^(b), R. Zepeda Bautista^(a) and L. M. Hernández Simón^(a)
Optical absorption coefficient of different maize varieties by Photoacoustic Spectroscopy
5. **C. Hernández Aguilar**^{(a,b)*}, A. Domínguez Pacheco^(a,b), A. Cruz-Orea^(b),
Feliciano Sánchez Sinencio^(b) and E. Martínez Ortiz^(a)
Non-radiative relaxation time of maize seed genotypes obtained by Photoacoustic Spectroscopy
^(a) Escuela Superior de Ingeniería Mecánica y Eléctrica, SEPI –Esime-Zac.-
Instituto Politécnico Nacional, 07730, México D.F., México
^(b) Departamento de Física, CINVESTAV – IPN, A. P. 14-740,
México D.F., C.P. 07360, México
6. **A. Domínguez Pacheco**^{(a,b)*}, C. Hernández Aguilar^(a,b), A. Cruz-Orea^(b) and
E. Martínez Ortiz^(a).
Thermal diffusivity of endosperm from thermal imaging of maize seed obtained for photopyroelectric microscopy
^(a) Escuela Superior de Ingeniería Mecánica y Eléctrica, SEPI, ESIME-ZAC. Instituto Politécnico Nacional, 07730, México D.F., México
^(b) Departamento de Física, CINVESTAV – IPN, A. P. 14-740,
México D.F., C.P. 07360, México
7. **A. Oleaga**^{*} and A. Salazar
Critical behaviour study of ferroelectric $\text{Sn}_2\text{P}_2(\text{S}_{1-x}\text{Se}_x)_6$ by means of thermal diffusivity
Departamento Física Aplicada I, Escuela Técnica Superior de Ingeniería, Universidad del País Vasco, Alameda Urquijo s/n 48013-Bilbao, Spain.

8. **Ekaterina Selezneva***, Gianfranco Cerofolini, Elisabetta Romano, and Dario Narducci
Unexpected Trend of Seebeck Coefficient and Electrical Conductivity in Highly Doped Polysilicon Thin Films Upon Isochronal Annealing
 Department of Materials Science, University of Milano Bicocca,
 via R. Cozzi 53, I-20125 Milano - Italy

9. **M. Chirtoc(a)***, N. Horny(a), J.F. Henry(a), I. Tavman(b), I. Kökey(b), A. Turgut(b),
 I. Krupa(c) and M. Omastova(c)
Photothermal Evidence of Thermal Percolation in High Density Polyethylene – Expanded Graphite Composites
 (a)Multiscale Thermophysics Lab., GRESPI-ECATHERM,
 Univ. Reims, Moulin de la Housse, BP 1039, F-51687 Reims, Cedex 2, France
 (b)Mechanical Engin. Dept., Dokuz Eylul Univ., 35100 Bornova, Izmir, Turkey
 (c)Polymer Institute, SAS, Dúbravská cesta 9, 842 36 Bratislava, Slovakia

10. **S. Sfarra**^{(a)*}, C. Ibarra-Castaneda^(b), D. Ambrosini^(a), D. Paoletti^(a),
 A. Bendada^(b), and X. Maldague^(b)
Holographic Interferometry (HI), Pulsed Thermography (PT) and Near-Infrared (NIR) Reflectography for studying the influence of wood behavior in exterior finish surface of artifacts
^(a) DIMEG – Las.E.R. Laboratory, University of L'Aquila, Loc. Monteluco di Roio –
 Roio Poggio – L'Aquila (AQ), I-67100, Italy
^(b) Department of Electrical and Computer Engineering –
 Computer Vision and Systems Laboratory, Laval University, Quebec City (Quebec),
 G1K7P4, Canada

11. L. Di Dio^(a), **G.L. Leahu**^{(a)*}, R. Li Voti^(a), C. Sibilia^(a), M. Bertolotti^(a), V. Golubev^(b),
 D.Kurdyukov^(b), S.Kaplan^(b), C. Lopez^(c), A. Altube^(c)
Study of Thermal and Optical Properties of Opals by Photothermal Radiometry
 (a) Fundamental and Applied Science for Engineering Department –
 Sapienza Università di Roma
 (b) IOFFE Institute, (c) ICMN Madrid

12. L. P. Alves^(a), **V. Pilla**^{(a)*}, P. R. Barja^(b), and E. Munin^(a)
Thermal-Optical Characterization of Pure and Quantum Dots Embedded in Dental Resin Composites
^(a) Center of Biomedical Engineering, Universidade Camilo Castelo Branco-Unicastelo,
 São José dos Campos, SP, Brazil.
^(b) Institute of Research and Development, Universidade do Vale do Paraíba-Univap,
 São José dos Campos, SP, Brazil.*

13. V. M. Dias^(a), **V. Pilla**^{(a)*}, H. P. M. Oliveira^(a), and E. Munin^(a)
Spectroscopic Characterization in Annatto and Commercial Colorific
 (a) Center of Biomedical Engineering, Universidade Camilo Castelo Branco -Unicastelo,
 São José dos Campos, SP, Brazil.