Eurotherm Seminar 108 – Updated Program

SUNDAY, SEPTEMBER 25TH

6:00PM – 8:00PM
Registration & Ice-break

MONDAY, SEPTEMBER 26TH

8:00AM – 9:45AM
Registration

9:30AM – 9:45AM
Opening Session

Tutorials

9:45AM – 10:30AM	D. G. Cahill - Time domain thermoreflectance 1.0: Fundamentals
10:30AM – 10:45AM	Coffee Break
10:45AM – 11:30AM	A. Togo - First-principles lattice thermal conductivity calculation and phonon database
11:30AM – 12:15PM	K. Joulain - Introduction to fluctuationnal electrodynamics
12:15PM – 1:30PM	Lunch Break
1:30PM – 2:15PM	D. Jaque - Luminescence nanothermometry: Fundamentals and Applications
2:15PM – 3:00PM	P. Keblinski – Determination of Thermal Conductivity and Interfacial Thermal Resistance by Molecular Dynamics Simulations
3:00PM – 3:15PM	Coffee Break
3:15PM – 4:00PM	D. Poulikakos - How to arrest, interrogate and transport viruses in liquids one at a time

Quantiheat Workshop - SESSION A- SThM novel instrumentations

9:45AM	**Introduction by P. Dobson & S. Gomès**
10:00AM	QHA-01: Quantitative scanning probe microscopy techniques for heat transfer management in nanomaterials and nanodevices – QUANTIHEAT project: Identity and main progresses S. Gomès and QuantiHeat Consortium p22
10:15AM	QHA-02: Systems for Quantitative Scanning Thermal Microscopy Temperature Measurement

	Y. Zhang, R. K. Rajkumar, Y. Ge, R. Lambert, Z. Umatova, P. S. Dobson and J. M. R. Weaver	p23
10:30AM	COFFEE BREAK	
10:45AM	QHA-03: Sensor for low dimensional heat transport measurement Z. Umatova, Y. Zhang, R. Rajkumar, P. Dobson, J. M. Weaver	p24
11:00AM	QHA-04 : Numerical tools for fast SThM data simulations P. Klapetek, J. Martinek	p25

Quantiheat Workshop - SESSION B - SThM measurement

11:15AM	QHB-01: Structural and thermal properties of bare and chromium-covered block copolymer A. El Sachat, E. Guen, A. Robson, J. Spiece, M. Kreuzer, P. O. Chapuis, S. Gomès, O. Kolosov, F. Alzina, C. M. Sotomayor Torres	p26
11:30AM	QHB-02: High resolution SThM microscopy with fluorescent nanoprobes H. J. Lin, A. Assy, E. Lemaire, D. Briand, A. Descamps-Mandine, L. Billot, P. Gredin, M. Mortier and L. Aigouy	p27
11:45AM	QHB-03: Thermal-AFM under aqueous environment F. Tofani, P. S. Dobson, J. M.R. Weaver and H. Yin	p28
12:00PM	QHB-04: Investigation of the heat transfer between various heated scanning thermal microscopy probes and model samples S. Gomès, A. Assy and S. Lefèvre	p29
12:15PM	LUNCH BREAK	

Quantiheat Workshop - SESSION C - Other advances for thermal nanometrology & imaging

1:30PM	QHC-01: Scanning Thermal Microscopy: Modelling of probe/sample heat transfer for the Wollaston probe, influence of sample structure P. Al Alam, N. Trannoy	p30
1:45PM	QHC-02: Simple Thermal Models to Inform the Design and Fabrication of Next Generation SThM Probes and Samples P. S. Dobson, Y. Ge, R. Lambert, Y. Zhang and J. M. R. Weaver	p31
2:00PM	QHC-03: Comprehensive modelling of probe-sample heat transfer for ambient and vacuum conditions J. Spiece, A. Robson, C. Evangeli, O. Kolosov	p32
2:15PM	QHC-04: Initial development of quantitative scanning thermal microscopy (SThM) measurements for thermal transitions of polymeric materials A. Dawson and A. S. Maxwell	p33
2:30PM	**QUANTIHEAT CONSORTIUM ENDING REMARKS**	
3:00PM	COFFEE BREAK	

SESSION I - Conduction, Experiment I

3:15PM	S01-01: Thermal Transport of Disk Media Using Scanning Thermal Microscopy S. W. Poon, J. Spiece, A. J. Robson, O. V. Kolosov, S. M. Thompson	p35
3:30PM	S01-03: Thermal investigation of a phase change memory device at the nanoscale J. L. Battaglia, A. Saci, I. De, V. Sousa, P. Noë	p37
3:45PM	S01-04: Nanoscale Characterization of the Thermal Conductivity of Supported Graphite Nanoplates, Graphene and Few-layer Graphene M. Tortello, S. Colonna, J. Gomez, I. Pasternak, W. Strupinski, M. Pavese, F. Giorgis, G. Saracco, R.S. Gonnelli, A. Fina	p38

Flash Poster Presentation

TUESDAY, SEPTEMBER 27TH

SESSION II - Conduction, Experiment II

9:15AM	**S02-IT: Plasmonic Thermometry and Plasmonic Probes of Ultrafast Evaporation and Condensation (invited)** D. G. Cahill, J. Huang, J. Park, and X. Xie	p41
9:45AM	S02-02: Thermal properties and applications of ultra-thin highly doped silicon membranes A. Shchepetov, A. Varpula, A. Timofeev, B. Graczykowski, C. Sotomayor Torres, M. Prunnila, J. Ahopelto	p42
10:00AM	S02-04: Temperature measurement at microscale using thin films: benefits, fabrication and applications B. Garnier, C. Rodiet and A. Djouadi	p44
10:15AM 10:45AM	COFFEE BREAK	

SESSION III - Conduction, Theory and Simulations I

10:45AM	S03-01: Validity of the isotropic thermal conductivity assumption in supercell lattice dynamics R. Ma and J. R. Lukes	p46
11:00AM	S03-02: Phonon spectrum in the Kinetic and Collective transport regimes P. Torres, F. Xavier Bafaluy, A. Torelló, X. Cartoixà, F. Xavier Alvarez	p47
11:15AM	S03-03: Diffusion and localization of vibrations in amorphous and nanocomposite materials A. Tanguy, Y. Beltukov, V. Giordano, T. Damart, A. Tlili and D. Rodney	p48
11:30AM	S03-04: Geometric tuning of spinless particles in arbitrary nanotubes S. Fumeron, B. Berche, L. C. B. Da Silva, F. Santos, F. Moraes	p49
11:45AM	S03-05: Modeling the heat transfer in mesoscopic structures in the presence of nanoscale non-uniformity X. Zianni, K. Termentzidis and D. Lacroix	p50
12:00PM	S03-06: An extended Fourier description and efficient multiscale simulation methods for describing micro- and nanoscale solid-state heat transport J. P. M. Peraud and N. G. Hadjiconstantinou	p51
12:15PM	LUNCH BREAK	

SESSION IV- Radiation, Theory and Simulations I

1:30PM	**S04-IT: Thermal transistor in the dynamical regime and the quantum regime (invited)** K. Joulain, Y. Ezzahri, J. Ordonez-Miranda and J. Drevillon	p53
2:00PM	S04-01: Thermotronics: toward circuits for the thermal management with photons P. Ben-Abdallah and S.-A. Biehs	p54
2:15PM	S04-02: Photon thermal Hall effect: toward a thermo-magneto-plasmonic	

SESSION V - Phononic Crystals

WEDNESDAY, SEPTEMBER 28TH

SESSION VI - Conduction, Thermoelectrics

9:00AM	**S06-IT: Peculiar Behavior of Cold Water Drops on Superhydrophobic Surfaces and Intrinsic Supericephobicity (invited)** D. Poulikakos	p67
9:30AM	S06-01: SrTiO3 Thin Films and Multilayers as Efficient Thermoelectric Materials S. Bhansali, C. M. Sotomayor Torres	p68
9:45AM	S06-02: Enhancing thermoelectric performance by tailoring thermal conductivity E. Hatzikraniotis, Th. Kyratsi, K.M. Paraskevopoulos	p69
10:00AM	S06-03: Tuning the thermal conductivity of Bi2Te3 one dimensional nanostructures: simulation and synthesis N. Stein, K. Termentzidis, A. Danine, S. Li, L. Thiebaud, L. Chaput, S. Legeai, C. Boulanger, D. Lacroix	p70
10:15AM	S06-04: Thermal conductivity reduction in Ordered Three-dimensional Bi_2Te_3 thermoelectric networks O. Caballero-Calero, L. Vera, M. Muñoz-Rojo, J. Buencuerpo, M. Martín-González	p71
10:30AM 11:00AM	COFFEE BREAK	

SESSION VII - Radiation, Experiment

11:00AM	S07-01:Ultrafast Hot Carrier Imaging in a Plasmonic Taper S. Dilhaire, O. Lozan, B. E. Kim, P. Lalanne	p73
11:15AM	S07-02: Near-field thermal radiation measurements on doped/undoped semiconductor multilayers and complex metallic surfaces Y. De Wilde, F. Peragut, V. Krachmalnicoff, R. Pierrat, R. Carminati, J. J. Greffet, J. P. Hugonin, T. Taliercio, V. Ntsame Guilengui, S. Collin, N. Bardou	p74
11:30AM	S07-03: Calibration of a Nano-scaled Near Field Sensor for the Imaging of the Local Heat Transfer Quantitatively A. Kittel, K. Kloppstech, N. Könne, D. Hellmann, and L. Worbes	p75
11:45AM	S07-04: Thermography for spatiotemporal studies of heat transfer between glass fibers E. Perros, V. Krachmalnicoff, A.C. Boccara, R. Carminati, Y. De Wilde, P., V. Grigorova-Moutiers, C. Charmantray, G. Lecamp	p76
12:00PM	S07-06:Measuring thermal diffusivities with photothermal single particle microscopy A. Heber, M. Selmke and F. Cichos	p78
12:15PM	LUNCH BREAK	

SESSION VIII – Posters (1:30PM)

3:00PM	COFFEE BREAK
3:15PM	**EXCURSION, AKROTIRI - ARCHEOLOGICAL SITE**
6:30PM	**SUNSET WITH SANTOS WINE TASTING**
8:30PM	**GALA DINNER AT MARIO'S RESTAURANT AT KAMARI**

THURSDAY, SEPTEMBER 29TH

SESSION IX - Radiation, Theory and Simulations II

9:00AM	**S09-IT: In vivo applications of luminescent nanothermometers (invited)** D. Jaque, B. Rosal, U. Rocha, P. Haro, F. Sanz, N. Fernández, M.C. Iglesias, E. Carrasco, A. Juarranz, J. Garcia Solé, C. Jacinto, E. Ximendes, C. Brites, L.D. Carlos	p113
9:30AM	S09-01: Temperature gradients induced by strongly-coupled radiative and conductive heat transfer at the nanoscale R. Messina	p114
9:45AM	S09-02: Ballistic effects on in-plane and cross-plane thermal conductivity in 1D and 2D configurations: a numerical investigation E. Nefzaoui and P. O. Chapuis	p115
10:00AM	S09-03: Molecular Dynamics simulations of the optical properties in 3C, 2H, 4H and 6H silicon carbide structures under pressure and temperature G. Domingues, A. Mekeze Monthe, S. Guévelou, B. Rousseau	p116
10:15AM	S09-04: Role of frustrated modes in the performance of near-field radiation mediated thermophotovoltaic devices E. Blandre, M. P. Bernardi, O. Dupré, M. Francoeur, P.-O. Chapuis, R. Vaillon	p117
10:30AM	S09-05: Far-Field Thermal Transistor Based on Thermal Hysteresis J. Ordonez-Miranda, Y. Ezzahri, J. Drevillon, and K. Joulain	p118
10:45AM	COFFEE BREAK	

SESSION X - Conduction, Experiment III

11:00AM	S10-01: Toward quantum regime of thermal transport by a new generation of membrane-based attowatt-calorimeter A. Tavakoli, K. Lulla, T. Crozes, E. Collin, O. Bourgeois	p120
11:15AM	S10-02: Resonant scattering of phonons by nanoscale roughness at interfaces A. Ramiere, S. Volz and J. Amrit	p121
11:30AM	S10-03: A microscale thermal conductivity prediction model for porous building materials W. Van De Walle and H. Janssen	p122
11:45AM	S10-04: Measurement of thermal boundary resistance with high frequency photothermal radiometry N. Horny, M. Chirtoc, G. Hamaoui, A. Fleming, H. Ban	p123
12:00PM	S10-05: Thermal conductivity evaluation of silicon nanowires arrays with photothermal techniques O. Didukh, O. Ilchenko, P. Lishchuk, A. Salnikova, D. Andrusenko, L. Osminkina, V. Timoshenko, T. Nychyporuk, V. Lysenko, and M. Isaiev	p124
12:15PM	S10-06: High-throughput thermal properties measurements of ternary Si-Ge-Fe libraries using a modulated heterodyne time domain thermoreflectance Q. d'Acremont, J.M. Rampnoux, A. Furlan, A. Ludwig, G. Pernot, S. Dilhaire	p125
12:30PM	LUNCH BREAK	

SESSION XI - Heat and Mass Transfer, Solid/Liquid interfaces I

1:30PM	**S11-IT: Modeling of Evaporative Processes via Molecular Simulations (invited)** P. Keblinski	p127
2:00PM	S11-01: Thermal transport in liquids: interfacial resistance and ultrafast phase change S Merabia, J. Lombard, A. Alkurdi, T. Biben, D. Amans and J. Lam	p128
2:15PM	S11-02: Molecular dynamics simulation of the Leidenfrost effect M. Isaiev, S. Burian, L. Bulavin, M. Gradeck, F. Lemoine, K. Termentzidis	p129
2:30PM	S11-03: Nanothermics at hot core-shell nanoparticles A. Alkurdi, J. Lombard and S. Merabia	p130
2:45AM	S11-04: Thermal transport across interface "nanostructured solid surface/fluid" by photoacoustic technique K. Voitenko, M. Isaiev, D. Andrusenko, A. Kuzmich, V. Lysenko, and R. Burbelo	p131
3:00PM	COFFEE BREAK	

SESSION XII - Heat and Mass Transfer, Solid/Liquid interfaces II

3:15PM	S12-01: The effect of nano-scale roughness orientation on liquid propagation and condensation dynamics D. Orejon, O. Shardt, N. S. Kumar Gunda, S. K. Mitra and Y. Takata	p133
3:30PM	S12-02: Experimental study of multi-scale heat transfer at pool boiling on smooth and microstructured surfaces V. Serdyukov, A. Surtaev, A. Chernyavskiy, S. Khmel, E Baranov and A. Zamchiy	p134
3:45PM	S12-03: Heat transfer in nanofluids for solar-thermal conversion M. R. Rodríguez-Laguna, M. Sledzinska and C. M. Sotomayor Torres, P. Gómez-Romero	p135
4:00PM	S12-04: Plasma coated surfaces for enhancement the heat transfer and critical heat flux at pool boiling A. Surtaev, D. Kuznetsov, A. Pavlenko, V. Kalita, D. Komlev, A. Radyuk, A. Ivannikov and V. Tumanov	p136

SESSION XIII - Conduction, Theory and Simulations II

4:15PM	S13-01: Heat transport through a solid-solid junction: the interface as an autonomous thermodynamic system R. Rurali, L. Colombo, X. Cartoixà, Ø. Wilhelmsen, T. T. Trinh, D. Bedeaux, and S. Kjelstrup	p138
4:30PM	S13-02: The influence of edge and screw dislocations of wurtzite GaN on the thermal conductivity K. Termentzidis, M. Isaiev, A. Salnikova, I. Belabbas and J. Kioseoglou	p139
4:45PM	S13-03: Molecular Dynamics study of thermal properties of Si/Ge and polytypic interfaces B. Davier, Y. Chalopin, P. Dollfus1, S. Volz, J. Saint-Martin	p140
5:00PM	S13-04: Thermal conductivity of nano-structured Silicon with nano-pores and nano-inclusions M. Verdier, D. Lacroix and K. Termentzidis	p141

FRIDAY, SEPTEMBER 30TH

SESSION XIV - Conduction, Theory and Simulations III

9:00AM	**S14-IT: Recent progress of systematic lattice thermal conductivity calculations with Boltzmann equation and first-principles phonon calculation (invited)** A. Togo, L. Chaput, and I. Tanaka	p143
9:30AM	S14-01: Atomistic modeling of phonon transport through ferroelectric domain walls M. Royo, C. Escorihuela, J. Íñiguez and R. Rurali	p144
9:45AM	S14-02: Collective excitations of flexural phonons in supported graphene A. France-Lanord, P. Soukiassian, C. Glattli, and E. Wimmer	p145
10:00AM	S14-03: Phonon transport effects in disordered graphene nanoribbons N. Neophytou and H. Karamitaheri	p146
10:15AM	S14-04: Electronic Thermal Conductivity of Metal Solids from Non-equilibrium Ab Initio Molecular Dynamics S. Y. Yue, M. Hu	p147
10:30AM	COFFEE BREAK	
10:45AM	S14-05: Heat transport in bulk cubic semiconductor crystals due to large temperature gradients Y. Ezzahri, J. Ordonez-Miranda and K. Joulain	p148
11:00AM	S14-07: Time-dependent conductive heat transfer in rarefied polyatomic gases confined between parallel plates A. Tsimpoukis, C. Tantos, D. Valougeorgis	p149
11:15AM	S14-08: Numerical simulation of the non-uniform temperature field induced by a Gaussian laser for Raman thermometry analysis J. Jaramillo-Fernandez, E. Chavez-Angel, B. Graczykowski and C. M. Sotomayor Torres	p150
11:30AM	**ENDING REMARKS**	
12:15PM	LUNCH BREAK	
1:30PM	**SCIENTIFIC COMMITTEE MEETING**	
3:00PM	COFFEE BREAK	

Poster session

Monday 26th starting at 4:00PM - flash poster presentation
Author of the posters may present their work in 2 minutes with 1 or 2 slides maximum

Wednesday 28th from 1:30PM to 3:00PM – poster session