

# Eurotherm Seminar #83 - Computational Thermal Radiation in Participating Media

15-17 April , Lisbon, Portugal

## Seminar Programme

Day		Title	Authors
15 April	8.00	Registration	
15 April	9.00	Welcome	
		<b>RTE solution methods – new developments</b>	
15 April	9.15	A discrete ordinates method associated to ultraspherical-polynomials approximation for solving the radiative transfer problem in spherical media	T. Sghaier and E. Sediki
15 April	9.40	On the discontinuities in the angular derivative of the radiation intensity for radiative-transfer problems subject to Fresnel boundary and interface conditions	R. D. M. Garcia
15 April	10.05	Radiative transfer in participating, isotropically scattering, inhomogeneous three dimensional rectangular enclosures	M. Tekkalmaz and Z. Altaç
15 April	10.30	Investigation of numerical error due to spatial discretization in finite volume method for thermal radiation by an oblique laser incidence model	H.-C. Zhang and H.-P. Tan
15 April	10.55	Coffee break	
		<b>Radiative Transfer in Complex Geometries and/or Optically Complex Media</b>	
15 April	11.20	Application of the spatial averaging theorem to radiative heat transfer in two-phase media	W. Lipinski, J. Petrasch, S. Haussener and A. Steinfeld
15 April	11.45	Photon path statistics in turbid media	J. Y. Rolland, S. Blanco, M. El Hafi and R. Fournier
15 April	12.10	Solar-to-thermal energy conversion via porous materials	C.C. Tseng and R. Viskanta
15 April	12.35	A time-dependent computational model for radiation in a spatially varying refractive index biological medium	H. Trabelsi, M. Gantri, E. Sediki and R. Bensalah
15 April	13.00	Lunch break	
15 April	14.30	New modified finite volume method applied to radiative transfer in 2D complex geometries and graded index media	F. Asllanaj and S. Fumeron
15 April	14.55	Development and comparison of different spatial numerical schemes for the radiative transfer equation resolution using three-dimensional unstructured meshes	R.Capdevila, C.D.Pérez-Segarra and A.Oliva
15 April	15.20	Combination of geometry and finite elements for radiative heat transfer	P. Vueghs, H.P. de Koning and O. Pin
15 April	15.45	Coffee break	
		<b>Monte Carlo method</b>	
15 April	16.10	Monte Carlo procedures: A unified view for radiative transfer, electron-beam transport and for thermal conduction by electrons and phonons	B.T. Wong, M.P. Mengüç
15 April	16.35	Polarization imaging of multiply-scattered radiation based on an integral-vector Monte Carlo method	B. Gay, R. Vaillon and M.P. Mengüç
15 April	17.00	Monte Carlo estimations of domain-deformation sensitivities for optimal geometric design	J. de la Torre, J.Y. Rolland, M. Roger, M. El Hafi, R. Fournier, S. Blanco and J.J. Beziau
15 April	17.25	Study of an oct-tree based Monte Carlo algorithm for gas radiative transfer in complex geometries	N. Kahhali, Ph. Rivière and A. Soufiani
15 April	18.30	Welcome reception	
		<b>Coupled Heat Transfer Problems Involving Radiative Effects</b>	
16 April	9.15	Combined thermal radiation and convection in combustion gas mixtures flowing inside circular ducts	S. Trabelsi, W. Lakhal, E. Sediki and A. Soufiani
16 April	9.40	Numerical study of combined forced convection and radiation heat transfer for developing flow in a pipe with a rod	D. Dhruv and A. Sharma
16 April	10.05	Unsteady coupling of Navier-Stokes and radiative heat transfer solvers applied to an anisothermal multicomponent turbulent channel flow	J. Amaya, O. Cabrit, D. Poitou, B. Cuenot and M. El Hafi
		<b>Applications to atmospheric radiation, combustion systems, fires and thermal protection devices</b>	
16 April	10.30	Radiative-convective model for one-dimensional longwave clear sky atmosphere	G. Aydin, G. Kulah and N. Selçuk

16 April	10.55	Coffee break	
16 April	11.20	An infrared radiative transfer parameterization for venusian global circulation models	V. Eymet, R. Fournier, S. Blanco and N. Meilhac
16 April	11.45	Evaluation of turbulence/radiation effects using LES combustion simulation data	W. Malalasekera, M. Deiveegan, S. Sadasivuni, S.S. Ibrahim
16 April	12.10	Large eddy simulation of strongly radiating flame in a compartment fire	Z. Yan and B. Sunden
16 April	12.35	Attenuation of radiation by water sprays under downward and upward injection conditions	S. Lechene, G. Parent, G. Jeandel, P. Boulet
16 April	13.00	Lunch break	
16 April	14.00	<b>Poster session</b>	
16 April	15.35	Coffee break	
		<b>Radiative Properties of Particles, Agglomerates and Disperse Systems</b>	
16 April	16.00	An effect of turbulent clustering on scattering of microwave radiation by small particles in the atmosphere	L.A. Dombrovsky and L.I. Zaichik
16 April	16.25	Effects of aggregation on the absorption cross section of fractal soot aggregates and its impact on LII modelling	F. Liu and G.J. Smallwood
16 April	16.50	Scattering and absorption by carbon dusts in the frame of plasma discharges	D. Lacroix, P. Boulet, Y. Peng, L. de Pouques and R. Hugon
16 April	19.00	Departure of buses to conference dinner	
16 April	20.00	Conference dinner	
16 April	23.00	Return to hotels	
		<b>Gas radiation modelling</b>	
17 April	9.30	A novel approach of evaluating absorption line black body distribution function employing propel orthogonal decomposition	G. Weceł, Z. Ostrowski and R. Bialecki
17 April	9.55	Application of CW local correction approach to SLW modelling of radiative transfer in non-isothermal gaseous media	V.P. Solovjov and B.W. Webb
17 April	10.20	A database for the SLMB modeling of the full spectrum radiative properties of CO <sub>2</sub>	F. André and R. Vaillon
17 April	10.45	Validity limits for the global model FS-SNBCK for combustion applications	D. Poitou, J. Amaya, S.C. Bhushan, D. Joseph, M. El Hafi and B. Cuenot
17 April	11.10	Coffee break	
		<b>Transient RTE and Microscale Effects</b>	
17 April	11.35	Near-field thermal radiation emission from SiC thin films	M. Francoeur, M.P. Mengüç and R. Vaillon
17 April	12.00	Interaction of a short-pulse laser with a participating medium bounded by diffusely reflecting boundaries	B.N. Padhi, P. Rath and S.K. Mahapatra
17 April	12.25	A least square finite element formulation of the collimated irradiation in frequency domain for optical tomography applications	O. Balima, T. Pierre, A. Charette and D. Marceau
17 April	12.50	Lunch break	
		<b>Inverse Methods in Radiative Transfer</b>	
17 April	14.00	Inverse estimation of inlet parameters in an axisymmetric cylindrical combustor with radiation effect	K.H. Lee and S.W. Baek
17 April	14.25	Simultaneous estimation of source and refractive index distributions in a one-dimensional absorbing, emitting and scattering graded index medium	A. Namjoo, S.M.H. Sarvari and A. Behzadmehr
17 April	14.50	Inverse radiation analysis of a two-dimensional enclosure using stochastic particle swarm optimization	Y.M. Wang, H.P. Tan, H.C. Zhang and Y. Shuai
17 April	15.15	Coffee break	
17 April	15.40	Open forum and closing discussions	