11th International Symposium on Radiative Transfer

RAD-25 • KoruMar Hotel De Luxe, Kuşadasi, Türkiye

15 - 20 June 2025

SUNDAY JUNE 15

15:30 - 18:00 REGISTRATION

MONDAY JUNE 16

7:30 – 8:30 REGISTRATION

8:30 – 8:55 WELCOMING REMARKS (K Daun / F Liu/ I Tari)

PLENARY LECTURE

Chair: Brent Webb

8:55 – 9:40 **Reflections on Thirty Years of the International Symposia on Radiative Transfer**
M. Pinar Mengüç

SESSION 1 – PARTICLE/EM WAVE INTERACTIONS - I

Chair: Fengshan Liu

9:40 – 10:05 APPLICATION OF STATIC STRUCTURE FACTOR FOR POLYDISPERSE PARTICLE SUSPENSIONS (RAD25-28)
S Dincer, RA Yalçın, H Ertürk

10:05 – 10:30 COMPARISON OF SAXS MODELS WITH THE HELP OF PAIR CORRELATION FUNCTIONS (RAD25-49)

M Littin, M Mazur, G Lefevre, M Sztucki, A Fuentes, **J Yon**

10:30 – 10:55 Coffee Break

SESSION 2 – HETEROGENEOUS MEDIA - I

Chair: **AV Nenarokomov**

10:55 – 11:20 COMPARATIVE ANALYSIS OF METHODS FOR SOLVING CONDUCTION-RADIATION COUPLING IN HETEROGENEOUS MATERIALS (RAD25-48)
L Penazzi, MA Badri, S Blanco, C Caliot, S Chupin, C Daoût, J Dauchet, S Eibner, M El Hafi, F Enguehard, V Eymet, O Farges, Y Favennec, A Adjovi Fortunat, R Fournier, D Jehl, Y Jobic, P Jolivet, F Rigollet, D Rochais, B Rousseau, F Topin, J Vicente, G Vignoles

11:20 – 11:45 DEVELOPMENT OF A PHYSICS-BASED RADIATIVE MODEL FOR ANISOTROPIC SCATTERING ABSORBING MEDIUM (RAD25-43)
A Yassin, SJ Poovathingal

11:45 – 12:10 DEVELOPMENT OF THE EFFECTIVE MEDIUM THEORY APPLICABILITY MAP (RAD25-30)
S Akay, RA Yalçın, H Ertürk

12:10 – 12:35 A TWO-STEP SOLUTION TO CALCULATE NORMAL REFLECTANCE OF SNOW IN OBLIQUE SUNLIGHT (RAD25-06)
LA Dombrovsky

12:35 – 14:00 LUNCH BREAK

DEDICATION LECTURE 1
Chair: Michael Modest

14:00 – 14:45 HIGH ACCURACY, COMPUTATIONALLY EFFICIENT MODELING OF RADIATIVE TRANSFER IN GASES
Brent W Webb

SESSION 3 – GAS RADIATION
Chair: Pedro Coelho

14:45 – 15:10 AN IMPROVED SUPERPOSITION WEIGHTED-SUM-OF-THE-GRAY-GASES MODEL FOR MIXTURES OF ARBITRARY COMPONENTS (RAD25-01)
GC Fraga, RJC da Fonseca, F Asllanaj, FHR França

15:10 – 15:35 EVALUATION OF THE WIDE-BAND BASED WEIGHTED-SUM-OF-GRAY-GASES MODEL APPLIED TO TWO-DIMENSIONAL PROBLEMS ENCLOSED BY NON-GRAY WALLS (RAD25-56)
RJC da Fonseca, GC Fraga, FHR França

15:35 – 16:00 Coffee Break

16:00 – 16:25 A COMPARISON OF MACHINE / STATISTICAL LEARNING STRATEGIES FOR MODELING THE RADIATIVE PROPERTIES OF NON-UNIFORM GASEOUS ATMOSPHERES (RAD25-03)
X Aihemaiti, T Ren, L Guilmard, **F André**

16:25 – 16:50 A PHYSICS-INFORMED NEURAL NETWORK-BASED WSGG MODEL FOR H_2O-CO_2-CO MIXTURES (RAD25-08)
W Chen, R Yang, **T Ren**

16:50 – 17:15 AN IMPLEMENTATION OF ℓ-DISTRIBUTION MODEL WITH QUASI-MONTE CARLO METHOD FOR RADIATIVE TRANSFER IN PARTICIPATING MEDIA (RAD25-20)
SP Roy, F André

18:30 – 20:00 WELCOME RECEPTION

TUESDAY JUNE 17

DEDICATION LECTURE 2
Chair: Kyle Daun
8:30 – 9:15 EFFECT OF RADIATION ON NATURAL CONVECTION IN SEMITRANSPARENT GASEOUS MEDIA
Denis Lemonnier

SESSION 4 – MONTE CARLO METHODS
Chair: Somesh Roy

9:15 – 9:40 A WAVENUMBER SELECTION ALGORITHM FOR REVERSE MONTE CARLO SIMULATIONS (RAD25-39)
LGP Rodrigues, N Tricard, X Zhao

9:40 – 10:05 FLUORESCENT BIOMARKERS QUANTIFICATION WITH SYMBOLIC MONTE CARLO FOR INTRAOPERATIVE IMAGING IN NEUROSURGERY (RAD25-32)
L Martinez-Ceseña, **M Roger**, M Galtier, A Gautheron, L Mahieu-Williame, B Montcel, L Penazzi, A Delmas

10:05 – 10:30 SENSITIVITY CALCULATION IN SPECTRO-RADIATIVE COUPLING: A COMPARATIVE STUDY FOR THREE MONTE CARLO PATH INTEGRALS (RAD25-57)
N Mourtaday, F André, S Blanco, C Cornet, J-L Dufresne, R Fournier, Z He, Y Nyffenegger-Péré, J Riedi

10:30– 10:55 Coffee Break

SESSION 5 – PARTICLE/EM WAVE INTERACTIONS - II
Chair: Mengqi Liu

10:55 – 11:20 INVESTIGATION OF THE APPARENT ANOMALOUS COOLING OF SOOT DURING LASER-INDUCED INCANDESCENCE (RAD25-34)
S Robinson-Enebeli, C Schulz, KJ Daun

11:20 – 11:45 SCATTERING PROPERTIES OF CRUMPLED FEW-LAYER GRAPHENE AND GRAPHENE OXIDE PARTICLES INVESTIGATED BY WIDE-ANGLE LIGHT SCATTERING (WALS) (RAD25-35)
Hİ Yazıcı, P Lang, HI Looi, FJT Huber, S Will, C Schulz, KJ Daun

11:45 – 12:10 SOOT PRIMARY PARTICLE DIAMETER AND REFRACTIVE INDEX DETERMINED FROM MOBILITY SIZE DISTRIBUTION, VOLUME FRACTION, AND ABSORPTION AND SCATTERING COEFFICIENTS (RAD25-38)
F Liu, TA Sipkens, JC Corbin

12:10 – 13:40 LUNCH BREAK

SESSION 6 – RADIATION IN COMBUSTION AND FIRES – I
Chair: Guilherme Fraga

13:40 – 14:05 NUMERICAL CALCULATION AND ANALYSIS OF SPECTRUM EMITTED BY FLAME IN A BOILER FURNACE BURNING HIGH ALKALI COAL (RAD25-21)
Y Pu, B Yao, Z Hu, C Lou

14:05 – 14:30 NUMERICAL BENCHMARK FOR MODELING SPRAY-RADIATION INTERACTION IN FIREFOAM: IMPLEMENTATION AND VALIDATION OF THE FVDOM MODEL (RAD25-23)
E Chopard, V Robin, Z Bouali

14:30 – 14:55 EVALUATING PERFORMANCE OF APPROXIMATE RADIATION MODELS AGAINST PHOTON MONTE CARLO LINE-BY-LINE BENCHMARK FOR FIRE SIMULATION (RAD25-19)
C Paul, **SP Roy**, J Sailer, F Brännström, MM Ahmed, A Trouvé, H Bordbar, S Hostikka, R McDermott

14:55 – 15:20 COMPARISON OF FVM WITH DGFEM SOLVING THE RADIATIVE TRANSFER EQUATION (RAD25-53)
J Sailer, F Brännström

15:20 – 15:45 Coffee Break

SESSION 7 – RADIATION IN COMBUSTION AND FIRES – II
Chair: Maxime Roger

15:45 – 16:10 NUMERICAL SIMULATION OF COMBUSTION IN A GLASS MELTING FURNACE: INFLUENCE OF SPECTRAL RADIATION MODELS (RAD25-31)
B Halvaşi, A Melik Başol, MP Mengüç

16:10 – 16:35 CHARACTERIZATION OF SPECTRAL TURBULENCE-RADIATION INTERACTION FOR LUMINOUS FLAMES (RAD25-42)
GC Fraga, PJ Coelho, J-L Consalvi, X Zhao

16:35 – 17:00 THE EFFECTS OF THERMAL RADIATION WITH/WITHOUT TRI ON PERFORMANCE OF AERO-ENGINE COMBUSTORS WITH VARYING GEOMETRIC SCALES BY PRESERVING SIMILARITY OF DYNAMICS (RAD25-46)
J Zhu, Y Liu, G Liu

17:00 – 17:25 AN A PRIORI EVALUATION OF CONDITIONAL SOURCE TERM ESTIMATION (CSE) FOR MODELING TURBULENCE RAIDATION INTERACTION IN SOOTING NON-PREMIXED JET FLAMES (RAD25-33)
J-L Consalvi, F. Nmira

17:25 – 17:50 TOMOGRAPHIC RECONSTRUCTION OF THE LOCAL PROBABILITY DENSITY FUNCTION OF SOOT VOLUME FRACTION IN A TURBULENT JET DIFFUSION FLAME (RAD25-22)
F Liu, F Nmira, J-L Consalvi

WEDNESDAY JUNE 18

POYNTING AWARD LECTURE
Chair: **M. Pinar Mengüç**
8:30 – 9:30

SESSION 8 – NANOSCALE AND NEARFIELD RADIATION - I
Chair: Hakan Ertürk

9:30 – 9:55 NEAR-FIELD RADIATIVE HEAT TRANSFER INSIDE TWISTED BILAYER LATTICE WITH ANISOTROPIC BAND TOPOLOGY (RAD25-10)
Z Gong, WB Zhang, HF Yang, C-Y Zhao

9:55 – 10:20 THE PLASMONIC METASURFACE THERMAL EMITTER FOR CATALYSIS AND SENSING (RAD25-13)
J Zhou, M Liu, C Zhao

10:20 – 10:45 Coffee Break

SESSION 9 – NANOSCALE AND NEARFIELD RADIATION - II
Chair: M. Pinar Mengüç

10:45 – 11:10 EVALUATION OF QUANTUM AND SPECTRAL EFFICIENCIES IN A SIMPLE NEAR-FIELD THERMOPHOTOVOLTAIC DEVICE (RAD25-37)
YM Kose, **H Ertürk**

11:10 – 11:35 A FEASIBILITY STUDY FOR ENHANCING LIGHT ABSORPTION BY GOLD NANOSPHERES VIA DIELECTRIC NANOROD ADDITION FOR PHOTOTHERMAL THERAPY APPLICATIONS (RAD25-29)
EŞ Tahmaz, **H Ertürk**

11:35 – 12:00 IMPACT OF NATIVE OXIDE ON NEAR-FIELD RADIATIVE HEAT FLUX MODULATION IN SILICON-BASED PHOTONIC P-N JUNCTION (RAD25-18)
G Wang, D Xu, J Zhao

12:00 – 12:25 EAR-FIELD ENERGY AND ENTROPY DENSITY, FLUX, AND EFFECTIVE TRANSMISSION VELOCITY (RAD25-15)
ZM Zhang, ANM Fuhadul Islam, S Mostafa Ghiaasiaan

12:25 – 13:55 LUNCH BREAK

FREE AFTERNOON

THURSDAY JUNE 19

KEYNOTE LECTURE 1
Chair: Denis Lemonnier
8:30 – 9:15 RADIATIVE TRANSFER IN SOLAR ENERGY CONVERSION
Xiulin Ruan

SESSION 10 – SURFACE PROPERTIES
Chair: Denis Lemonnier

9:15 – 9:40 ESTIMATING OXIDE LAYER THICKNESS USING *EX SITU* REFLECTANCE MEASUREMENTS OF HOT STAMPED Al-Si COATED 22MnB5 STEEL (RAD25-51)
A Bhattacharya, C Yau, KJ Daun

9:40 – 10:05 EXPERIMENTAL SETUP DEVELOPMENT FOR CEO_2 NORMAL SPECTRAL EMISSIVITY MEASUREMENT AT HIGH TEMPERATURE (RAD25-58)
L Gaillard, **A Aouali**, J. Aubril, G. Biotteau, P-M. Geffroy, B. Rousseau

10:05 – 10:30 SPECTRAL RADIATIVE PROPERTIES OF COMMON BUILDING MATERIALS AND THEIR IMPACT ON RADIATIVE COOLING (RAD25-25)
Y Yan, A Hervé, M Hendel, T Bourouina, E Nefzaoui

10:30 – 10:55 Coffee Break

SESSION 11 – HETEROGENEOUS MEDIA - II
Chair: Xiulin Ruan

10:55 – 11:20 RADIATIVE TRANSFER IN SEMITRANSPARENT FIBROUS SUBSTRATES FOR PHOTOELECTROCHEMICAL REACTIONS (RAD25-50)
A Bhanawat, S Haussener

11:20 – 11:45 MULTISCALE APPROACH FOR DESIGNING Pr2NiO4+δ-BASED OPEN CELL FOAMS WITH PRESCRIBED RADIATIVE PROPERTIES UP TO 1,000°C (RAD25-36)
B Rousseau, A. de la Vauvre, L Gaillard, A Aouali, J Vicente

11:45 – 12:10 ROLE OF THE TEXTURE OF AN OPEN-CELL FOAM ON THE DESIGN BY TOPOLOGY OPTIMIZATION OF A VOLUMETRIC SOLAR RECEIVER (RAD25-59)
A De la Vauvre, Y Favennec, L Cangémi, B Rousseau

12:10 – 13:40 LUNCH BREAK

SESSION 12 – REMOTE SENSING – I
Chair: Sunil Kumar

13:40 – 14:05 INTER-COMPARISON OF DIFFERENT ORDER-SCATTERING MODELS FOR ACCURATE SENSING IN DUSTY CONDITIONS (RAD25-40)
S Nejjari, A Ben-Daoued, F Bernardin, C Debain, PS Heritier

14:05 – 14:30 HIGHER-ORDER MODAL DECOMPOSITION OF URBAN IRRADIANCE VARIABILITY IN SPACE AND TIME (RAD25-45)
G Le Gall, M Thebault, V Simoncini, J Ramousse

14:30 – 14:55 COMPARISON OF LWIR AND MWIR IMAGING FOURIER TRANSFORM SPECTROMETERS FOR ESTIMATING CH4 AND CO2 EMISSION RATES (RAD25-52)
AR Singh, CS Turcotte, KJ Daun

14:55 – 15:20 PROBABILISTIC MACHINE LEARNING FOR XCO_2 RETRIEVALS FROM SATELLITE SPECTRAL DATA (RAD25-09)
W Chen, T Ren

15:20 – 15:45 Coffee Break

15:45 – 16:10 ON THE PERFORMANCES OF GASEOUS ABSORPTION MODELS (LBL, CKD, AND ALD) IN A RADIATIVE FORWARD MODEL FOR ATMOSPHERIC REMOTE SENSING (RAD25-26)
A Rimboud, N Mourtaday, F Thieuleux, C Cornet, J Riedi, LC-Labonnote, F André ´

16:10 – 16:35 THE CONCEPT OF QUASI-CORRELATED SPECTRA AND ITS APPLICATION IN ATMOSPHERIC REMOTE SENSING SCENARIOS (RAD25-62)
F André, VP Solovjov, BW Webb, N Mourtaday, Ph Dubuisson

16:35 – 18:00 POSTER SESSION

19:30 - 23:00 GALA DINNER

FRIDAY JUNE 20

KEYNOTE LECTURE 2
Chair: Zhuomin Zhang

8:30 – 9:15 PHOTON TUNNELING MEDIATED HEAT TRANSFER IN PARTICLE NETWORKS: FROM PARTICLE-SCALE TO CONTINUUM-SCALE
Junming Zhao

SESSION 13 – RADIATION IN CONJUGATE HEAT TRANSFER APPLICATIONS
Chair: Benoit Rousseau

9:15 – 9:40 IDENTIFICATION OF MATHEMATICAL MODELS OF RADIATIVE-CONDUCTIVE HEAT TRANSFER IN BIOLOGICAL TISSUES (RAD25-16)
AV Nenarokomov, DS Semenov, SA Budnik, DM Titov

9:40 – 10:05 NUMERICAL INVESTIGATION OF THERMAL LOAD ON LIQUID ROCKET ENGINE BASE PLATE (RAD25-55)
V Sharma, M Kundra, G Singh, P Kumar

10:05 – 10:30 COUPLED SIMULATIONS OF RADIATIVE TRANSFER AND NONEQUILIBRIUM FLOW IN HIGH ALTITUDE ROCKET PLUMES (RAD25-17)
G Janodet, J-M Lamet, P Rivière, V Rialland, A Soufiani

10:30 – 10:55 Coffee Break

SESSION 14 – INVERSE PROBLEMS
Chair: Frederic André

10:55 – 11:20 RECONSTRUCTING TEMPERATURE FIELD AND RADIATIVE PROPERTIES INSIDE BOILER FURNACE THROUGH DEEP LEARNING (RAD25-02)
Y An, S Ren, C Lou, N Kalaycı

11:20 – 11:45 A LINEARIZATION TECHNIQUE FOR THE RETRIEVAL OF SNOW VERTICAL PROPERTIES (RAD25-41)
LL Mei, V Rozanov

SESSION 15 – RADIATION UNDER PLASMA CONDITIONS
Chair: Frederic André

11:45 – 12:10 RADIATION MODELLING FOR ELECTRICAL ARC SIMULATION IN AIR PLASMAS (RAD25-24)
F Ouchar, P Rivière, C Van de Steen, A Soufiani

12:10 – 12:35 MEASURING THE DIRECTIONAL EMISSIVITY OF PLASMA FACING COMPONENTS AT HIGH TEMPERATURES WITH A NEW SETUP, MAGRYT (RAD25-27)
F Retailleau, M-H Aumeunier, P Malard

12:35 – 12:55 CONCLUDNG STAEMENTS

12:55 – 14:00 LUNCH BREAK

14:00 END OF RAD-25 SYMPOSIUM

POSTER PRESENTATIONS

Thursday, June 15
16:35 – 18:00

P01 APPLICATION OF A ℓ-DISTRIBUTION MODEL WITH MONTE CARLO AND QUASI-MONTE CARLO METHODS FOR RADIATIVE TRANSFER IN GAS MIXTURES
SP Roy, F André

P02 INTERACTION OF SURFACE RADIATION AND BUOYANCY-INDUCED FLOW IN HOLLOW BUILDING STRUCTURES
IV Miroshnichenko, NS Bondareva

P03 ON THE IMPACT OF SCATTERING EVENTS ON THE CONVERGENCE OF QUASI-MONTE CARLO METHODS FOR RADIATIVE TRANSFER CALCULATIONS IN ATMOSPHERIC REMOTE SENSING SCENARIOS
A Rimboud, N Mourtaday, F Thieuleux, C Cornet, SP Roy, F André

P04 HIGH-TEMPERATURE NONRECIPROCAL THERMAL RADIATIVE PROPERTIES OF SEMICONDUCTORS
B Nabavi, B Zhao

P05 TOWARDS A REFERENCE FRAMEWORK FOR RADIATIVE TRANSFER AND UNCERTAINTY PROPAGATION IN STOCHASTIC MEDIA
N Mourtaday, F André, S Blanco, C Cornet, J-L Dufresne, R Fournier, J Riedi