Plenary Lecture
Spectroscopy and radiative transfer: selected research and applications

Contributed Papers: Advances in Radiative Transfer
Derivation of an equivalent Mueller Matrix associated to an absorbing, emitting and multiply scattering plane medium
Determination of nanowire thermal conductivity by solving the phonon Boltzmann transport equation

Contributed Papers: Transient Radiative Transfer Problems
Pulse laser radiation transfer: monte carlo simulation and comparison with experiment
Analysis of light-pulse transport through two-dimensional scattering and absorbing media

Contributed Papers: Transient Radiative Transfer Problems
Transient radiative transfer in three-dimensional homogeneous and nonhomogeneous participating media

Contributed Papers: Discrete Ordinates Approximations
Discrete ordinates solution of radiative transfer across a slab with variable refractive index
A mean flux discrete ordinates interpolation scheme for general co-ordinates
The role of ray effects and false scattering on the accuracy of the standard and modified discrete ordinates methods

Contributed Papers: Accuracy of Radiation Transfer Models
A comparison of convergence and error estimates for the monte carlo and discrete transfer methods
Comparison of radiative heat transfer methods using benchmark test cases
Optimized net exchange monte carlo simulation of flame radiation

Contributed Papers: Radiative Transfer Models
The SKN approximation for solving radiation transport problems in absorbing, emitting, and scattering rectangular geometries
Numerical solution of axisymmetric radiative transfer problems in arbitrary domains using the characteristic method
Improvement of computational time in radiative heat transfer of three-dimensional participating media using the radiation element method

Contributed Papers: Combined Radiation Transfer Modes
Numerical solution of coupled convective-radiative heat transfer on triangular meshes
Improvement of the finite volume method for coupled flow and radiation calculations by the use of two grids and rotational periodic interface

Contributed Papers: Radiation Transfer in Gas Mixtures
A multi-scale full-spectrum correlated-k distribution for radiative heat transfer in inhomogeneous gas mixtures
A local-spectrum correlated model for radiative transfer in non-uniform gas media

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A fictitious-gas based statistical narrow-band model for IR long-range sensing of H2O at high temperature

Non-gray gas modeling in complex enclosures: application of the hybrid SNB-CK method

Modeling of band overlap in gas mixtures with the smoothed (re-ordered) band model

The joint use of patch's mean absorption coefficient and the discrete transfer method in gas-only environments

Contributed Papers. Particles and Aggregates

Radiative properties of fibers with non-circular cross sectional shapes

Numerical investigation of the effect of aggregation on the phase function and scattering coefficient of soot in the infrared region

A depolarization based optical scattering technique to measure the onset of early agglomeration of flame generated nano-size soot particles

Spectroscopic analysis and modeling of particulate matter formation in diesel engine

Contributed Papers: Radiation Transfer in Foams and Particulate Media

Radiative heat transfer between a small particle and a surface at nanometric distances

Radiative transfer in a semitransparent hemispherical shell

Depolarization of radiation by non-absorbing foams

Review Paper I

Laser based techniques for temperature and species measurements

Contributed Papers: Advanced Diagnostics

Sensitivity of temperature and concentration measurements in hot gases from FTIR emission spectroscopy

Medium resolution transmission measurements of CO2 at high temperature

Measurement of gas temperature distributions in a test furnace using spectral remote sensing

Dedication Lecture I

Studies of high-temperature thermal insulation systems for fuel cells

Contributed Papers: Radiation Transfer in Material Processing

Precision polymer molding assisted by infrared laser irradiation

A new control technique for polymer blend morphology using radiation heating

Transient cooling of a cylindrical glass gob

Periodic method for characterization of glass by use of an analytical model

Contributed Papers: Radiation Transfer in Biomedical Applications

The effect of thermal lensing during selective photothermolysis
Determination of the absorption and reduced scattering coefficients of biological tissues from time-resolved reflection measurements

Contributed Papers: Radiation Transfer in Particulate Media

A modified differential approximation for thermal radiation of semitransparent nonisothermal particles: application to optical diagnostics of plasma spraying

A new approach for radiative heat transfer in particulate media

Dedication Lecture II

On some peculiarities and applications of the inverse radiative transfer problem

Contributed Papers: Inverse Radiation Problems

Comparison of three regularized solution techniques in a three-dimensional inverse radiation problem

Development of a method to estimate profiles of equivalent absorption coefficient for gray analysis

Inverse radiative-conductive problems in material property estimation

Identification of spectral radiative properties of polyurethane foam from hemispherical and bi-directional transmittance and reflection measurements

Contributed Papers: Radiation Transfer in Flames and Burners

Effects of gas and soot radiation on soot formation in a co-flow laminar ethylene diffusion flame

Application of boundary element method and analysis of the role of radiation effects in a labscale turbulent diffusion flame

Radiation and thermal performance measurements of a metal fiber burner

Radiative behavior of a honeycomb radiant burner

Contributed Papers: Radiation Transfer in Combustion Systems

Performance of method of lines solution of discrete ordinates method in the freeboard of a bubbling fluidized bed combustor

Modeling of radiative heat transfer in the upper dilute zone of circulating fluidized beds

Radiation effects in combustion chambers of coal-fired boilers with a fixed-bed

Contributed Papers: Radiation Transfer in Combustion Systems

Application of composition PDF methods in the investigation of turbulence-radiation interactions

Modelling of radiation transfer in expanding laser-inducedplasma of Al vapour

Analysis of the effect of diesel engine operating conditions on soot formation by spectroscopic investigation

Thermofluidodynamic simulation of practical combustion systems and prediction of NOx by reactor network analysis

Radiative heat transfer features of technological interest in combustion processes with high level of flue gas recirculation

Contributed Papers: Radiation Transfer in Atmosphere
Review Paper II

A critical appraisal of the current spectroscopic databases used in atmospheric and other radiative transfer applications p. 607

Combined stochastic and transfer model for atmospheric radiation p. 618

Contributed Papers: Radiation Transfer Applications

Two-phase thermal radiation effects on the sound wave propagation in gas-particle two-phase medium p. 625

Transient combined radiation and conduction heat transfer in fibrous media p. 633

Experimental determination of absorption properties of building materials p. 641

Contributed Papers: Radiation Transfer Applications

A concept of prognostic and diagnostic system for monitoring of gas turbine combustion chambers p. 653

Calculation of stomatal resistance of maize ear using a precise model of radiation exchange in the field p. 661

Clausius principle and radiative transfer in curved space-time p. 668

Meteoroid fall into the ocean: impact on solar radiation transfer p. 678

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