



2nd European Conference on Non-Equilibrium Gas Flows
9th-11th December 2015, Eindhoven, the Netherlands

Conference Program

Location: De Zwarte Doos
University Campus: building 4

Wednesday 9 December

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| 8:30 | Registration | |
| | Theatre | |
| 9:30 | Word of welcome Chair Person : A. Frijns | |
| 10:00 | Keynote Lecture 1 [76] A.P.J. Jansen Modelling the Effect of the Structure of the Surface of a Catalyst on the Kinetics of the Surface Reactions. | |
| 10:30 | Coffee Break | |
| | Theatre | Colloquium Room |
| | Session 1A : Rarefied Gas Flows & Heat Transfer 1 Chair Person : E. Arlemark | Session 1B : Micro and Nano Scale flows, Heat Transfer & Devices 1 Chair Person : S. Nedea |
| 11:00 | [6] B. Goshayeshi, E. Roohi and S. Stefanov A Review of Kac-Based Collision Models: Bernoulli Trials and its Simplified and Intelligent Variants | [14] H. Zhang, S. Nedea, C. Rindt and D. Smeulders Thermal Contact Resistance in Carbon Nanotube Enhanced Heat Storage Materials |
| 11:20 | [9] F. Sharipov and A. Volkov Direct Simulation Monte Carlo Modelling of Rarefied Gas Flow Past a Circular Cylinder Based on Ab Initio Interatomic Potential | [16] I. Gerken, J. Brandner and R. Dittmeyer Assessment of Gas to Gas Micro Heat Exchangers with Pin Fin Geometries |
| 11:40 | [13] G. Di Staso, H. Clercx, S. Succi and F. Toschi Hybrid DSMC-LBM Scheme for Rarefied and Continuum Gas Flows | [66] A. Westerkamp, J. Bunger and M. Torrilhon Computation of Slow Micro Flows with Moment Approximations of the Boltzmann Equation using OpenFOAM |
| 12:00 | Lunch Break | |

Wednesday 9 December

| Theater | | |
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| 13:30 | <p>Keynote Lecture 2 Chair Person : S. Colin [81] J. Brandner MIGRATE – a new European Innovative Training Network for Gas Flow Heat Transfer in Microscale</p> | |
| Theatre | Colloquium Room | |
| Session 2A : Rarefied Gas Flows & Heat Transfer 2 Chair Person : J. Brandner | Session 2B : Evaporation, Condensation & Adsorption Chair Person : K. Shterev | |
| 14:10 | <p>[34] D. Bruno, A. Frezzotti and G. Ghiroldi Rayleigh-Brillouin Scattering in Molecular Oxygen by CT-DSMC Simulations</p> | <p>[56] S. Naris, C. Tantos and D. Valougeorgis Effect of Thermal Accommodation Coefficient on the One-dimensional Flow Rate of Single Gases on Adsorbing Planar Surfaces</p> |
| 14:30 | <p>[24] M. Spiga, P. Vocale, G.L. Morini and S. Colin Shear Work Contribution to Convective Heat Transfer of Dilute Gases in Slip Flow Regime</p> | <p>[50] M. Kon, K. Kobayashi and M. Watanabe Microscopic Investigation of Boundary Condition at Vapor-liquid Interface during Unsteady Evaporation and Condensation</p> |
| 14:50 | <p>[31] D. Kalempa and F. Sharipov Sound Propagation through a Binary Mixture of Rarefied Gases at Arbitrary Sound Frequency</p> | |
| 15:10 | Coffee Break | |
| Session 3A : Rarefied Gas Flows & Heat Transfer 3 Chair Person : F. Toschi | Session 3B: Gas-Surface Interactions 1 Chair Person : S. Naris | |
| 15:50 | <p>[15] K. Shterev and S. Stefanov Determination of Zone of Flow Instability in a Gas Flow Past a Square Particle in a Narrow Microchannel at All Speeds</p> | <p>[30] H. Yamaguchi, O. Mabuchi, K. Takamori, Y. Matsuda and T. Niimi Flow Rate Measurement of Water Vapor through Microtubes</p> |
| 16:10 | <p>[57] D. Valougeorgis, S. Naris and N. Vasileiadis A Review on Recent Developments in Steady-state Pressure Driven Capillary Flows of Single Gases</p> | <p>[41] A.D. Pathak, S. Nedea, C. Rindt, D. Smeulders and H. Zondag Diffusive Transport of Water in Magnesium Chloride Hydrates</p> |
| 16:30 | <p>[2] V. Benites and F. Sharipov Transport Coefficients of Gaseous Mixtures Based on the Ab Initio Potential</p> | |
| 17:00 | Welcome reception and lab tours (University Campus Building 15: Gemini) | |

Thursday 10 December

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| 8:30 | Registration | |
| | Theatre | |
| 9:00 | Keynote Lecture 3 ; Chair Person : S. Stefanov [79] A. Frezzotti and P. Barbante Comparison of models for the study of simple liquid-vapor flows | |
| | Theatre | Colloquium Room |
| | Session 4A : Rarefied Gas Flows & Heat Transfer 4 Chair Person : J. Stafford | Session 4B : Micro and Nano Scale flows, Heat Transfer & Devices 2 Chair Person : C. Barrot |
| 9:40 | [35] C. Tantos, G. Ghiroldi, D. Valougeorgis and A. Frezzotti Effects of Vibrational Degrees of Freedom on the Heat Transfer in Polyatomic Gases Confined between Parallel Plates | [61] M. Mahdavi and E. Roohi Investigation of Cold to Hot Heat Transfer in a Nano Step Geometry |
| 10:00 | [38] J. Koellermeier and M. Torrilhon Numerical Solution of Hyperbolic Moment Models for the Boltzmann Equation | [17] J. Chen, S. Stefanov, L. Baldas, S. Colin, C. Barrot and M. Rojas-Cardenas Investigation of Temperature-Driven Flow between Ratchet Surfaces |
| 10:20 | [62] W. Jin, C. Kleijn and J.R. Van Ommen An Immersed Boundary Method for Rarefied Gas Flow Simulations with Direct Simulation Monte Carlo | [5] S.K. Dadzie, W. Tubby and C. Christou Investigation of Various Permeability Laws in Tight Porous Media |
| 10:40 | [63] R. Schaerer, P. Bansal and M. Torrilhon Entropy-based Moment Closures for Gas Dynamics | |
| 11:00 | Coffee Break | |
| | Session 5A : Gas-Surface Interactions 2 Chair Person : S. Varoutis | Session 5B : Aerothermodynamics of High Speed Flows 1 Chair Person : D. Giordano |
| 11:30 | [58] V. Shahabi, E. Roohi and S. Hardt Numerical Study of Mass Flux between Periodically Structured Surfaces | [10] F. Dias and F. Sharipov Ab Initio Simulation of Shock Waves Structure |
| 11:50 | [67] E. Silva, M. Rojas-Cardenas and C.J. Deschamps Tangential Momentum Accommodation Coefficient Measurements of Refrigerant R134a (Tetrafluoroethane) in Metallic Microtubes | [25] V. Titarev Numerical Modeling of High-Speed Rarefied Gas Flows over Blunt Bodies Using Model Kinetic Equations |
| 12:10 | [69] M.T. Ho, H. Yamaguchi, T. Imai, T. Iwai, A. Kondo, Y. Matsuda, T. Niimi and I. Graur Heat Transfer between Two Concentric Spheres: Experiments and Simulations | |

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| 12:30 | Lunch Break | |
| | Theater | |
| 14:00 | Keynote Lecture 4; Chair Person : D. Valougeorgis [78] L. Mieussens Numerical Simulation of the Crookes Radiometer | |
| | Theatre | Colloquium Room |
| | Session 6A : Rarefied Gas Flows & Heat Transfer 5 Chair Person : A. Frezzotti | Session 6B : Aerothermodynamics of High Speed Flows 2 Chair Person : V. Titarev |
| 14:40 | [60] S.M. Madani, B. Goshayeshi and E. Roohi Investigation of the SBT/SBT-TAS Performance in Unsteady Flows | [49] O. Rovenskaya and V. Aristov Kinetic Simulation of Supersonic Compressible Flow over Different Geometry Bodies |
| 15:00 | [64] Z. Cai and M. Torrilhon Moment Equations Based on the L ² -norm in the Gas Kinetic Theory | [19] T. Schwartzentruber and P. Valentini Direct Molecular Simulation of Dissociation Using Accurate Inter-atomic Potentials |
| 15:20 | [68] E. Arlemark Impact of Rarefied Gas Flows in Low Pressure Lithography | |
| 15:40 | Coffee Break | |
| | Session 7A : Rarefied Gas Flows & Heat Transfer 6 Chair Person : L. Mieussens | Session 7B : Gas-Surface Interactions 3 Chair Person : F. Sharipov |
| 16:10 | [43] G. Tatsios and D. Valougeorgis Accelerated Discrete Velocity Schemes for Solving Thermal Flow Problems in Rarefied Gas Dynamics | [51] T. Schwartzentruber, S. Poovathingal and E. Stern Molecular Simulation of Oxygen Reactions with Realistic Silica and Carbon Surfaces at High Temperature |
| 16:30 | [44] I. Voronich and V. Vershkov Development of VRDSMC Method for Wide Range of Weakly Disturbed Rarefied Gas Flows | [70] D. Giordano, P. Solano-López, J.M. Donoso, S. Nedea, A.D. Pathak and M. Eland Exploratory studies with a phenomenological theory of gas-surface interactions |
| 16:50 | [46] M. Abdel-Malik and H. Van Brummelen , Moment closure approximations of the Boltzmann equation based on phi-divergences: Hierarchical multi-scale methods | |
| 18:00 | Guided tour & Conference Dinner at the DAF-museum Address: Tongelresestraat 27, Eindhoven | |

Friday 11 December

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| | Theater |
| 9:00 | Keynote Lecture 5; Chair Person : I. Graur [82] G.L. Morini Experimental techniques for the analysis of gas forced convection in microchannels |
| | Theatre |
| | Session 8 : Vacuum Gas Dynamics & Metrology Chair Person : M. Wüest |
| 9:40 | [37] D. Pražák, M. Vičar, F. Staněk, L. Peksa, T. Gronych and M. Jeřáb CMI New Primary Vacuum Standard for Pressure Range up to Tens of Pa Based on Orifice Flow Principle |
| 10:00 | [40] S. Varoutis and C. Day The Role of Vacuum Gas Dynamics in Nuclear Fusion Applications |
| 10:20 | [52] M. Faye, R. Levallois and M. Ady Measurement of Atmospheric Air Inrush Speed into a High Vacuum Vessel |
| 10:40 | [39] L. Peksa, T. Gronych, M. Jeřáb, D. Pražák and M. Vičar Rendering Leak Value from Gas Throughput Measured under Different Conditions |
| 11:00 | Coffee Break |
| | Session 9 : Micro and Nano Scale flows, Heat Transfer & Devices 3 Chair Person : D. Newport |
| 11:30 | [18] U. Voss, J. Mohan, S. Woldemariam, B. Flurl, M. Renaud, T. Bolemann and C.-D. Munz Numerical Simulation of Low Pressure Gas-Damped Microstructures Using a Fluid-Structure-Interaction Approach |
| 11:50 | [22] F. Bao, S. Xiang, S. Luo and J. Lin Local Effective Viscosity of Gas in Nano-Scale Channels |
| 12:10 | [23] W. Ai, H. Duval, F. Pierre and P. Perre Rarefied Gas Flows in Softwood Tracheid Network: Identification of Morphological Parameters from Gas Permeability Measurements |
| 12:30 | Closing Ceremony |
| | Lunch |