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Discipline de Recherche : physique

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Liste de Publications 2010-2014 :

M. Rojas Cardenas, I. Graur, P.Perrier, J.G. Méolans, A new method to measure the thermal slip coefficient, HMT12015

E.Ya. Gatapova, I. Graur, F. Sharipov, O.Kabov, The temperature and pressure jumps at the vapor-liquid interface: Application to a two-phase cooling system, International Journal of Heat and Mass Transfer 83 (2015) 235–243

I Graur, T Veltzke, JG Méolans, MT Ho, J Thöming, The gas flow diode effect : theoretical and experimental analysis of moderately rarefied gas flows through a microchannel with varying cross section, Microfluidics and Nanofluidics, 1-12, DOI 10.1007/s10404-014-1445-4

MT Ho, I Graur, Numerical study of unsteady rarefied gas flow through an orifice, Vacuum, 2014, 109, 253-265

H. Yamaguchi, M. Rojas Cardenas, P. Perrier, I. Graur, T. Niimi, Thermal Transpiration Flow through a Single Rectangular Channel, Journal of Fluid Mechanics 744, 169-182, 2014

MH Nacer, I Graur, P Perrier, JG Méolans, M Wuest, Gas flow through microtubes with different internal surface coating, Journal of Vacuum Science & Technology A, 2013, 021601

V Martini-Laithier, I Graur, S Bernardini, K Aguir, P. Pierre, M. Bendahan, Ammonia detection by a novel Pyrex microsystem based on thermal creep phenomenon, Sensors and Actuators B: Chemical, v. 192, 1 March, Pages 714–719, 2014

I.Graur, M.T.Ho, Rarefied gas flow through a long rectangular channel of variable cross section, Vacuum, 101, 328-332, 2014

I. Graur, M.T. Ho, M.Wuest, Simulation of the transient heat transfer between two coaxial cylinders J. Vac. Sci. Technol. A, v. 31 (issue 6), Nov/Dec 2013, DOI: 10.1116/1.4818870

A. Polikarpov, I.Graur, Unsteady rarefied gas flow through a slit, Vacuum, v. 101, p. 79-85, 2014

F.Sharipov, I. Graur, General approach to transient flows of rarefied gases through long capillaries, Vacuum, 2014, v100, pp.22-25, <http://dx.doi.org/10.1016/j.vacuum.2013.07.017>

M. Rojas Cardenas, I. Graur, P.Perrier, J.G. Méolans, Thermal transpiration rarefied gas flow]{Time-dependent experimental analysis of a thermal transpiration rarefied gas flow, Physic of Fluids, 2013

J.G.Méolans, M. Hadj Nacer, M. Rojas Cardenas, P.Perrier, I.Graur, Effects of two transversal finite dimensions in long microchannel: Analytical approach in slip regime, Phys. Fluids, 24, 112005 (2012); <http://dx.doi.org/10.1063/1.4767514>

- O.Rovenskaya, A. Ph. Polikarpov , I. Graur, Comparison of the numerical solutions of the full Boltzmann and S-model kinetic equations for gas flow through a slit, *Computer & Fluids*, v 80, pp. 71-78, 2013
- H. Yamaguchi , K. Kanazawa, Y. Matsuda , T. Niimi , A. Polikarpov, I. Graur, Investigation on heat transfer between two coaxial cylinders for measurement of thermal accommodation coefficient, *Phys. Fluids* 24, 062002 (2012); doi: 10.1063/1.4726059
- F. Sharipov, I.Graur, Rarefied gas flow through a zigzag channel, *Vacuum*, VAC5628, 2012.
- M.Rojas, I. Graur, P.Perrier, J.G.Meolans An Experimental and Numerical Study of the Final Zero-Flow Thermal Transpiration Stage, *Journal of Thermal Science and Technology*, Vol.7, No.3, 2012, No. 11-0792, [DOI: 10.1299/jtst.7.1]
- I. Graur, A. Ph. Polikarpov , F. Sharipov, Numerical modelling of rarefied gas flow through a slit at arbitrary gas pressure ratio based on the kinetic equation, *Z Angew Math Phys ZAMP*, 2011; 49:1-18.
- I. Graur, A. Ph. Polikarpov , F. Sharipov, Numerical modeling of rarefied gas flow through a slit into vacuum based on the kinetic equation, *Computers & Fluids*, *Computers & Fluids* 49 (2011) 87–92
- Hadj Nacer, M., Graur, I., and Perrier, P., Mass flow measurement through rectangular microchannel from hydrodynamic to near free molecular regimes, *Houille Blanche – Revue Internationale de l'Eau*, n° 4, pp. 49-54, 2011.
- M.Rojas, I. Graur, P.Perrier, J.G.Meolans, Thermal transpiration flow: A circular cross-section micro-tube submitted to a temperature gradient, *Physic of Physic Letters*, vol. 23, n° 3, pp. 031702:1-4, 2011.
- P. Perrier, I.A. Graur, T. Ewart, J.G. Méolans Mass flow rate measurements in microtubes: from hydrodynamic to near free molecular regime, *Physics of Fluids*, Vol.23, Issue 4, 2011
- V. Martini, S. Bernardini, M. Bendahan, K. Aguir, P. Perrier, I.Graur, Microfluidic gas sensor with integrated pumping system, *Sensors and Actuators, B: Chemical* (2010), doi:10.1016/j.snb.2011.01.011
- A.Ph. Polikarpov, V.G. Chernayk, I. Graur, Some peculiarities of Couette flow problem in nonlinear statement, *International Journal of Microscale and Nanoscale Thermal and Fluid Transport Phenomena (IJMNTFTP)*, 2010, v.2, issue 1, article 4
- F. Sharipov, I. Graur and Ch. Day, Leak rate of water into vacuum through microtubes. [*J. Vac. Sci. Technol. A* 28\(3\)](#), 443-448 (2010)

Liste de Communications 2010-2014 :

- I. Graur, A. Polikarpov, V.Chernayk, Heat and mass transfer of rarefied gas in the Couette problem, 27–th International Symposium on Rarefied Gas Dynamics, July 2010, Monterey, California, US
- I. Graur, A. Polikarpov, F. Sharipov, Gas expansion into vacuum through a slit, 27–th International Symposium on Rarefied Gas Dynamics, July 2010, Monterey, California, US
- M. Rojas, M. Hadj Nacer, I. Graur, P. Perrier, Thermal creep effects in rarefied micro-flows, 2nd GASMEMS Workshop, 9-10 July 2010, Les Embiez, France

M. Hadj Nacer, I. Graur, P. Perrier, Mass flow measurement in rectangular micro-channels for wide Knudsen number range, 2nd GASMEMS Workshop, 9-10 July 2010, Les Embiez, France

I. Graur, A. Polikarpov, F. Sharipov, Gas expansion into vacuum through a slit, 2nd GASMEMS Workshop, 9-10 July 2010, Les Embiez, France

V. Martini, S. Bernardini, M. Bendahan, K. Aguir, P. Perrier, I. Graur. Fabrication and Characterization of Gas detection Microfluidic System Proc. Eurosensors XXIV, September 5-8, 2010, Linz, Austria

M. Rojas, P. Perrier, I. Graur, Thermal creep effects in rarefied micro-flows, APS conference, 23-25 November, California, USA

A. Polikarpov, I. Graur, Heat transfer problem between two coaxial cylinder with large temperature and radius ratios, second European Conference in Microfluidics, 8-10 December, 2010

M. Rojas, M. Hadj nacer, P. Perrier, I. Graur, Thermal creep effects in rarefied micro-flows, second European Conference in Microfluidics, 8-10 December, 2010

M. Hadj Nacer, P. Perrier, I. Graur, Mass flow measurement in rectangular micro-channel from hydrodynamic to near free molecular regime, second European Conference in Microfluidics, 8-10 December, 2010

I. Graur, A. Ph. Polikarpov, F. Sharipov, Numerical modeling of gas flow through a slit: kinetic approach, 64 th IUVESTA Workshop, Germany, May 2011

M. Hadj Nacer, P. Perrier, I. Graur, Mass flow rate measurements through microchannels with Gold and Silica surfaces in all flow regimes, 64 th IUVESTA Workshop, Germany, May 2011

M. Hadj-Nacer, I. Graur and P. Perrier "Mass flow rate measurement through rectangular microchannels for large Knudsen number range". Proc. of the ASME 2011 International Conference on Nanochannels, Microchannels, and Minichannels (ICNMM), Edmonton (Canada), June 19-22, (2011);

M. Hadj-Nacer, I. Graur and P. Perrier "Accommodation coefficient investigation in rectangular microchannels for large Knudsen number range". Proc. of the 15th International Meeting on Thermal Sciences, Tlemcen, (Algeria), September 24-26, (2011);

O. Rovenskaya, A. Ph. Polikarpov, I. Graur, Comparison of the numerical solutions of the full Boltzmann and S-model kinetic equations for gas flow through a slit, Parallel CFD conference, May 2011

M. Hadj Nacer, I. Graur, P. Perrier, Accommodation coefficients measurement in rectangular microchannels, GasMEMS International workshop and summer school, in *Proceedings on CDROM of 3rd International GasMEMS workshop*, Bertinoro, Italy, June, 2011

Rojas Cardenas, M., Graur, I., Perrier, P., and Meolans, G. J., A circular cross section micro-tube submitted to a temperature gradient, in *Proceedings on CDROM of 3rd International*

GASMEMS Workshop (GASMEMS11), Bertinoro, Italy, pp. GASMEMS 11-15:1-8, 6-11th of June 2011.

Rojas Cardenas, M., Graur, I., Perrier, P., and Méolans, J. G., Thermal Transpiration Flow, in *Proceedings on CDROM of 3rd Micro and Nano Flows Conference (MNF2011)*, Thessaloniki, Greece, pp. 1-7, 22-24 August 2011.

Rojas Cardenas, M., Graur, I., Perrier, P., and Méolans, J. G., Analysis of a thermal transpiration rarefied gas flow: a circular cross section micro-tube submitted to a temperature gradient along its axis, in *Proceedings on USB key of 4th International Conference on Heat Transfer and Fluid Flow in Microscale (HTFFM-IV)*, Fukuoka, Japan, pp. HTFFM-IV-076:1-7, 4th to 9th of September 2011.

M. Hadj-Nacer, I. Graur and P. Perrier “Accommodation coefficient investigation in all flow regimes: from hydrodynamic to near free molecular regimes”. Proc. of the 4th International Conference on Heat Transfer and Fluid Flow in Microscale (HTFFM-IV) Fukuoka, (Japan) September 4-9 (2011).

M. Hadj-Nacer, P. Perrier, J. G. Méolans, I. Graur and M. Wüest. “Experimental study of the gas flows through channels with circular cross sections”. Proc. of first International GasMEMS conference, Skiathos (Greece), June 5-8, (2012)

F. Sharipov, I. Graur, Rarefied gas flow through a zigzag channel, ICMC, Poerto Rico, July 2012.

I. Graur, State of art modelling in the transitional flow regime, 12 European Vacuum conference, 4-7 June, Dubrovnik, Croatia

Rojas Cardenas, M., Graur, I., Perrier, P., and Meolans, G. J., Experimental and numerical study of the Thermal thranspiration, in *Proceedings on 28 RGD conference, Zaragoza, July 2012*.

M. Hadj-Nacer, P. Perrier, J. G. Méolans, I. Graur and M. Wüest. ““Tangential momentum accommodation coefficients in industrial microtubes”. 28th Rarefied Gas Dynamic symposium, Seragoza, July 8-13, (2012).

M. Hadj-Nacer, P. Perrier, J. G. Méolans, I. Graur and M. Wüest, Tangential Momentum Accommodation Coefficients in Coated Microtubes, AVS 59th International Symposium and Exhibition, Tampa FL, Oct 28 - Nov 2, 2012

Y. Jobic, V. Pavan, F. Topin, I. Graur-Martin, R. Occelli, Une nouvelle approche cinétique de la formulation BGK pour résoudre les écoulements, SFT 28-31 mai 2013, Gérardmer, France

V. Laithier, S. Bernardini, K. Aguir, I. Graour, P. Pierrier and M. Bendahan, Thermal creep flow in microfluidic device for gas detection, AMA Conferences 2013 – 14-16 May 2013 Nuremberg, Germany

I. Graur, State of Art Modelling in the Transitional Flow Regime, 11th ICMC, Sapporo, Japan, June 2013.

A. Polikarpov, I. Graur, The time evolution of a rarefied gas flow through a slit. IVC-19 conference, Paris, France, 2013

F. Sharipov, I. Graur, Transient thermo-molecular pressure difference in a long tube, IVC-19 conference, Paris, France, 2013

M.T. Ho, I. Graur, M. Wuest, Simulation of the transient heat transfer between two coaxial cylinders, IVC-19 conference, Paris, France, 2013

I. Graur, T. Veltzke, J. G. Méolans, M. T. Ho, J. Thöming, Rarefied Gas Flow Through Divergent-Convergent Micro Channel, HTFFM-V, 22-25 April, 2014, Marseille, France

M.T. Ho, J-D Parisse, I. Graur, Oscillatory Couette flow of binary rarefied gas mixture, 4th European Conference on Microfluidics, Limerick, Decembre 10-12, 2014

D. Maharjan, M. Hadj-Nacer, M. Greiner, MT Ho, I. Graur, S. Stefanov, Simulation of heat transfer across rarefied gas in annular and planar geometries: comparison of Fluent, DSMC and DVM methods results, ASME 2015 12th International Conference on Nanochannels, Microchannels, and Minichannels, ICNMM, July 6-9, 2015, San Francisco, California, USA

Manzo T, Hadj-Nacer M, Ho MT, Graur I, Greiner M, Phenomena affecting used nuclear fuel cladding temperatures during vacuum drying operations, International High-Level Radioactive Waste Management conference, 12-16 April 2015, Charleston, SC, USA

Participations GDR, plates formes-technologiques, autres ... : GDR Microfluidique, comité de pilotage Réseau du Vide

Collaborations (nationales et/ou internationales) avec d'autres laboratoires de Recherche : équipe de capteurs IM2NP Aix-Marseille Université, Université de Toulouse; INSA; ICA (Institut Clément Ader); Université Marne la Vallée, Paris-Est, Nagoya University (Japon), KIT Karlsruhe (Germany), Université Fédérale de Parana, Curitiba (Brésil)

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