

# MIGRATE 2<sup>nd</sup> International Summer School

## Invited Lecturers

### **Dr. Kieran Curran (Becton Dickinson and Company, Ireland)**



Kieran's doctoral studies at the University of Limerick focused on developed novel designs for micro-devices for use in medical diagnostics. Completing his Ph.D. in 2005, he joined an exciting UL start-up called Stokes Bio where he spent 3 years. As an inventor of the company's core Liquid Bridge Technology, he participated in the design, development and commercialization of an innovative approach to genetic testing. Aged 25, Kieran founded his first company, Curran Scientific, as a specialist provider of engineering solutions. There, he led a team of engineers to provide design, test and manufacturing assistance to multi-national medical device companies. The desire for independent and novel technology development, however, never went away. In 2011, Kieran took the profits from Curran Scientific and invested them in a new venture called GenCell Biosystems. Over the next 4 years, Kieran led GenCell as CEO to develop best-in-class robotic genetic testing systems. With applications as broad as helping to improve human, animal and plant health - GenCell's technology is helping researchers to explore the complexity of DNA at unprecedented speed and detail. In 2014, the performance of Gencell technology was noticed by Becton Dickinson and Company (BD), a global medical technology leader, who acquired the company with Kieran appointed BD Director of Genomics, Ireland.

### **Prof. David Emerson (STFC Daresbury Laboratory, United Kingdom)**



David Emerson leads the computational Engineering Group and is a Visiting Professor at the University of Strathclyde. He received his degree in Physics and Applied Mathematics from University College Cardiff and a PhD in Aeronautical Engineering from the University of Manchester in 1990. His research focuses on two key themes: the first involves using high performance computers to deliver high-fidelity simulations in parallel computational fluid dynamics with recent simulations running on over 1,000,000 cores. The second theme involves the theory and modelling of micro- and nano-fluidics where his research has focused on low-speed rarefied gas dynamics, with a particular interest in developing computationally efficient methods for low-speed flow in the transition regime, and biomimetics, using biological rules to design microfluidic channels that replicate physiological conditions with application to regenerative medicine.

**Ing. Laurent Mazenq (Laboratoire d'Analyse et d'Architecture des Systèmes, Univ. of Toulouse, France)**



for gas sensing and chemical sensors.

Laurent MAZENQ was born on May 30, 1982. He received his University Institute of Technology's Degree from the University Paul Sabatier de Toulouse (France) in 2002. Then, he joined the Laboratoire d'Analyse et d'Architecture des Systèmes of the French Centre National de la Recherche Scientifique (LAAS-CNRS) as Engineer Assistant. From 2011 to 2012, he worked at Freescale Semiconductor Toulouse as process engineer on projection lithography steppers. Since then, he returned to the LAAS-CNRS and was graduated in 2016 from the Conservatoire National des Arts et des Métiers. He is currently in charge of the clean room's photolithography area. He has co-authored about 70 papers in scientific journals in process fabrication technologies, MEMS, microfluidics devices, silicon nanowire

**Prof. Felix Sharipov (Federal University of Parana, Brazil)**



approaches. The first one represents the Monte Carlo methods, while the second one is based on the kinetic Boltzmann equation.

Prof. Felix Sharipov studied at the Moscow University of Physics and Technology, Faculty of Aerophysics and Space Research. He obtained his Ph.D. at the Ural State Technical University. In 1988, he joined the Physics Faculty of the Ural State University where he set up his activity in rarefied gas dynamics. In 1992, he moved to the Federal University of Parana in Brazil where he built up a group on numerical modelling of gas flows in microscale. His research interests are numerical methods of rarefied gas dynamics applied to microfluidics, vacuum technology and aerothermodynamics. His group develops both probabilistic and deterministic

**Dr. Pascal Nicolay (Carinthian Tech Research (CTR AG), Villach, Austria)**



technology, with a focus on pressure monitoring and high-temperature applications. Pascal is author or co-author of more than 50 scientific publications as well as three patents, mostly dedicated to SAW sensors and applications.

Pascal Nicolay was born in Metz, France, in 1977. He received the Engineering Diploma from the Ecole Supérieure en Génie des Systèmes Industriels (INPL), Nancy, France, in 2001, and the M.Sc. and Ph.D. degrees in Physics from the University of Nancy, France, in 2004 and 2007, respectively. Pascal worked four years as a Chargé d'Affaires with the French Innovation Agency (ANVAR/OSEO) from 2001 to 2005, before joining the Laboratoire de Physique des Milieux Ionisés in 2005 (now Institut Jean Lamour). He then worked three years as a Product Designer with TDK-EPCOS before joining the Carinthian Tech Research (CTR AG), Villach, Austria, as an R&D Project Manager. He is currently in charge of the development of various industrial sensors based mostly on the SAW

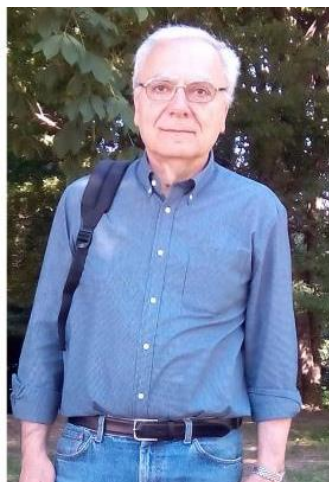
**Dr. Ann O'Connell (Advanced Materials Ireland)**



Ann has been working in the role of CCAN/Advanced Materials Ireland Coordinator since 2014, in this role she has engaged Industrial members, research providers and funding providers focused on TRL levels (5-7) to bridge the gap between industry and research. In her research role with the Centre for Bio-Nano Interactions (CBNI) she had a responsibility to direct her own research in the area of materials analysis for Bio applications. During her 15yrs with Intel Ireland Ann worked in an Advanced Manufacturing facility moving roles within the Industry from materials analysis to complete her time with the ICT manufacturer driving process changes based on research activities and high level data analysis.

**Migrate Network's Lecturers**

**Prof. Aldo Frezzotti (Politecnico di Milano, Italy)**



Professor Aldo Frezzotti graduated in theoretical physics in the State University of Milano in 1977. After graduation, he spent two years in the Transuranium Elements Institute of Euratom in Karlsruhe as a post-doc and three years in the research and development division of Alfa Romeo in Milano. In 1983, he became Assistant Professor in the Department of Mathematics of Politecnico di Milano where he became Associate Professor in 1992 and Full Professor in 2001. Since 2013, he is professor of theoretical mechanics in the Department of Aerospace Science and Technology of Politecnico di Milano. His research interest include kinetic theory methods and applications to non-equilibrium gas flows, kinetic theory of non-ideal fluids and numerical methods in statistical mechanics. He is a member of the Rarefied Gas Dynamics International Advisory Committee and of the Italian National Group for Mathematical Physics.

**Prof. Irina Graur (Aix Marseille University, France)**



Prof. Irina Graur obtained M.Sc. in applied mathematics in 1984 from Moscow Lomonossov State University. She received a PhD also from Moscow State University in 1989 and the Habilitation from Provence University in France in 2008. Irina Graur was associate professor at Keldish Institute of Applied Mathematics between 1984 and 2000. She is currently professor at Aix Marseille University in France. She has made a number of contributions in the field of rarefied gases for the aerospace research. Her current research interests include the experimental and numerical characterization of the gas properties at micro and nano scales. She heads the research group “Non-equilibrium phenomena and microfluidic” in IUSTI Laboratory. She participated in the organization of a number of

international conferences, workshops and summer schools. She has co-authored more than one hundred journal articles and conference papers.

**Prof. Stéphane Colin (INSA, University of Toulouse, France)**



Stéphane Colin is a Professor in the Mechanical Engineering Department of the National Institute of Applied Sciences (INSA) in the Université de Toulouse, France, since 2002. He obtained an Engineer degree from ENSEEIHT in 1987 and received his PhD in Fluid Mechanics from the Polytechnic National Institute of Toulouse in 1992. He created in 1999 the Microfluidics Group of the Hydrotechnic Society of France. Stéphane Colin initiated and co-chaired the three Microfluidics French Conferences and the four Microfluidics European Conferences ( $\mu$ FLU'06 to  $\mu$ Flu'14). His current research is mainly focused on gas microflows, with a particular interest in the experimental analysis of rarefied flows. He was the coordinator of the GASMEMS European Initial Training Network aimed at training young

researchers in the field of rarefied gas flows in MEMS. He is the author of more than 120 scientific papers in international journals or conference proceedings and the editor or co-author of four text books.

**Dr. Stergios Naris (University of Thessaly, Greece)**



Stergios Naris is a researcher in Department of Mechanical Engineering of the University of Thessaly. He held visiting positions in the Technological Educational Institute of Larisa and in the Department of Mechanical Engineering of the University of Thessaly for more than 12 years. He is also collaborating with the Hellenic Institute for Occupational Health & Safety. He has a degree in mechanical engineering from the Aristotle University Thessaloniki (1998) and M.Sc. (2003) and Ph.D. in microfluidics (2005) from the University of Thessaly. His Ph.D. thesis received the 1st Award from the Hellenic Association of Computational Mechanics in 2005. His work is focused on the numerical simulation of nonequilibrium flows with applications in micro- and nano-flows and vacuum systems including single gas and mixture flows. He is author or co-author of 22 refereed scientific publications in journals and more than 50 articles in international conference proceedings.

**Dr. Marcos Rojas-Cardenas (INSA, University of Toulouse, France)**



Since 2014, Marcos Rojas-Cardenas is an Assistant Professor at the Institut National des Sciences Appliquées (INSA) de Toulouse, and pursues his research activities in the Institut Clément Ader of the University of Toulouse. From 2013 until 2014 he was working as a Post-Doc in the Laboratories of Thermophysics at the Federal University of Santa Catarina, Brazil. In 2012 he obtained a PhD title from the Aix-Marseille University, where his main research was focused on "Thermally Driven Rarefied Gas Flows". His thesis was financed by a Marie-Curie Fellowship Grant (Seventh Framework Programme) within GASMEMS an European Initial Training Network. Marcos obtained his Master and Bachelor degrees from the University of Genoa, Italy.

**Dr. Christine Barrot Lattes (University of Toulouse, France)**



Christine Barrot Lattes is associate professor at the Institut Clément Ader, University of Toulouse, France. She obtained a Master's Degree in mechanical engineering from Supaéro, France in 2003 and Ph.D. degrees in mechanical engineering from INSA Toulouse, France in 2007. Her research interest mainly concerns the development of experimental techniques to characterize microfluidic flows: velocimetry and thermometry, imaging, instrumentation.



**Dr. Erik Arlemark (ASML, Eindhoven, The Netherlands)**



Erik Arlemark is born 1979 and raised in south of Sweden. He finished his master's degree 2006 in Mechanical Engineering specialized in energy systems at Uppsala technical university. After which he did his PhD in rarefied gas flows at University of Strathclyde in Scotland, which he finished 2010. The same year Erik started his postdoctoral research at Eindhoven University of Technology (TUE), on the topic of hybridizing DSMC and MD into one code. This research was part of GASMEMS (predecessor to MIGRATE). After the postdoctoral position, in 2012, Erik joined the lithography company ASML, which has its main facilities within bicycle distance from TUE. At ASML Erik applies his acquired knowledge of rarefied gas flows to designing the next generation lithography machine which is required to operate at medium vacuum conditions with very challenging specifications on flow behavior, mainly in aspect of contamination suppression and flow induced heat loads.

**Prof. Gian Luca Morini (University of Bologna)**



Gian Luca Morini is Professor of Applied Thermal Engineering at Alma Mater Studiorum Università di Bologna since 2002; he is chair of the Applied Thermal Engineering & Microfluidics Laboratory of the Department of Industrial Engineering of the University of Bologna. His main research interests lie in microscale heat transfer, forced convection, energy efficient buildings and renewable energy sources. He is author of more than 150 technical papers in the areas of heat transfer, micro heat exchangers, heating and cooling systems. He is member of many international scientific organizations like UIT (Italian Union of Thermal Fluid-dynamics), the EURO THERM Committee, the Scientific Committee of the Société Hydrotechnique de France (SHF), the Scientific Council of International Center of Heat and Mass Transfer (ICHMT) and the Assembly of the World Conference (AWC) on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics.