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In Celebration

Professor John W. Rose BScEng PhD DScEng(Lond) CEng FIMechE FASME on his 80th birthday

John Rose joined Queen Mary, a constituent College of the University of London, as an undergraduate student in Mechanical Engineering in 1955. Following graduation, he stayed on to undertake research for a PhD on Dropwise Condensation with advisor Edwin J. Le Fevre. He then remained at the College as Assistant Lecturer, Lecturer, and Reader. He has been Professor of Mechanical Engineering in the School of Engineering and Materials Science there since 1985, serving as Head of the Department of Mechanical Engineering 1991–1995. He is a Fellow of the UK Institution of Mechanical Engineers and of the American Society of Mechanical Engineers. He is a member of the UK Heat Transfer Committee and of the UK Heat Transfer Society of which he was president for 2007/08. His teaching interests are in the fields of thermodynamics, fluid mechanics and heat transfer. He has held sabbatical appointments at MIT, US Naval Postgraduate School and the Universities of Tokyo and Kyushu. His research interests are mainly in the field of condensation heat transfer, in which he has published some 300 theoretical and experimental papers. Since 1996, he has been UK editor of International Journal of Heat and Mass Transfer, International Communications in Heat and Mass Transfer, Experimental Heat Transfer, and serves on the advisory boards of several other journals.

Over a long and distinguished career, Prof. Rose has been the world's acknowledged pioneer in a wide range of topics related to phase-change heat transfer, and in particular, condensation, e.g., dropwise condensation, condensation of metals, condensation of mixtures, Marangoni condensation, kinetic theory of phase change, molecular dynamic simulation of phase change, condensation on microfinned tubes and in microchannels. Well before the research community focused its attention on the topic, Prof. Rose set the stage for accurate experiments and a mechanistic understanding of dropwise condensation, with measurements and a theoretical framework that has stood the test of time. With the recent resurgence of interest in this topic, researchers continue to use his foundational work as the basis from which to build their models. His contributions to the field of microscale condensation, in collaboration with colleagues at Queen Mary, are equally transformative. He was the first to systematically elucidate the role of gravitational, inertial and surface tension forces in the condensation process in microchannels. The ability of his analytical technique to "switch on and off" the various mechanisms makes it an invaluable tool to understand these phenomena, as well as to use them to advantage in condenser designs. Furthermore, the elegance of his technique is evident in the way he extracts essential insights and develops simple closed-form equations with excellent predictive capability. Such features make this research particularly amenable to implementation in real-world condenser designs, rather than being relegated only to scholarly publications. The breadth of fluids covered by his research on condensation is truly staggering, and includes synthetic and natural refrigerants, ammonia, steam, glycols, hydrocarbons, and even liquid metals.

Prof. Rose's research finds application in a variety of industries, e.g., nuclear, process plant, refrigeration/air conditioning. His papers on condensation heat transfer are widely quoted in advanced textbooks and reference handbooks. His model for condensation on low-finned tubes is recommended by ESDU (Engineering Sciences Data Unit) International plc, HTFS, HTRI and GREThe. One of his most cited papers, "Dropwise Condensation Theory and Experiment: A Review," published in 2002, provides a critical survey of pioneering work starting with Schmidt (1930) in Germany, his own contributions since 1964, and those of other researchers that followed. His work has been supported by and benefits industry (British Gas Co., AEA Harwell, National Nuclear Corp., Cal Gavin Ltd., Ford Motor Co., Modine Co., Compagnie Industrielle d'Applications Thermiques), and government and other funding bodies (EPSRC, Royal Society, Leverhulme Trust, National Science Foundation, and Office of Naval Research (USA)). He has supervised 28 PhD students.

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Prof. Rose is one of the most sought after speakers for invited lectures and presentations throughout the world at conferences, in universities and companies, notably in the USA, Japan, Korea, Russia, Brazil, India, as well as EU countries and the UK. Besides being a worldwide renowned expert in heat transfer, Prof. Rose is a science diplomat, who has played a major role throughout his career in fostering east-west and north-south interactions, and gives guidance freely to all, ranging from a young undergraduate to a colleague anywhere in the world. He is deeply admired by his co-workers and collaborators, and by the several generations of students at undergraduate and graduate levels, who have been fortunate to benefit from his solid fundamental knowledge offered through carefully prepared courses, lectures, and informal interactions. On behalf of the Heat Transfer community, we wish Prof. John Rose many more years of active research and intellectual enjoyment in this field he pioneered.

Antonio Barletta
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