

DISTINGUISHED SCHOLARS SEMINAR

THE PETROLEUM INSTITUTE, ABU DHABI

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Room 2123, Bu Hasa Building
The Petroleum Institute

Theoretical Estimation of Thermal Diffusion Coefficients for Ternary Hydrocarbon Mixtures: Comparison with Experimental Data

An accurate thermodiffusion model is of paramount importance to the petroleum industry for the prediction of the compositional variation in hydrocarbon reservoirs. Over the years, several theoretical models have been developed. In this seminar recent results of estimation of diffusion coefficients to three ternary hydrocarbon mixtures: Mix1 represents the mixture of methane, n-butane, and n-dodecane (0.5/0.2/0.3 mole fraction), Mix2 represents the mixture of n-dodecane, isobutylbenzene (IBB) and tetrahydronaphtalene (THN) (0.33/0.33/0.34 mass fraction) and Mix3 represents Octane(C8), Decane(C10) and 1-methylnaphtalene(MN) will be presented. Molecular and thermal diffusion coefficients were calculated for all mixtures. It reveals that the accuracy of the theoretical model for a specific mixture of interest relies on the availability and accuracy of the thermodynamic properties of its pure components. Additional mixtures such as water ethanol, water methanol and water isopropanol has been used and thermal and molecular diffusion coefficients has been calculated and compared to experimental data available in the literature.

Ziad completed his Ph.D. in 1984 in Mechanical Engineering at the University of Toronto and has been a Professor at Ryerson University since 1999. He established the private Al Hosn University in Abu Dhabi and served as acting President for two years 2004-2006. In that period he obtained accreditation from the UAE Ministry of Higher Education for five engineering programs (Industrial engineering, Civil engineering, Urban Planning, Software engineering, Architecture) as well as for an Interior Design program and for three business programs (Business Administration, Management Information System, MBA).

Ziad is a fellow member of the Canadian Society of Mechanical Engineering (2005). He is also the recipient of the Premier Research of Excellence Award PREA at the provincial level in Ontario (2000). He was involved in two space missions, in biotechnology and in material science, which were later flown on board the Space Shuttle. He managed different scientific missions flown on board the space rocket, the space shuttle and the KC-135 aircraft. During his employment at UAE University (1993-1999) he received a Research of Excellence Award (REA) from H.E. Sheikh Nahyan Bin Mubarak al Nahyan.

Ziad's current research is in the area of Computational Fluid Dynamics. He is involved in multi-disciplinary projects in material science and biotechnology. In September 2000, he initiated a project investigating the effects of oil in weightlessness. The goal of the project is to measure the thermal and molecular diffusion coefficients for different hydrocarbon mixtures. His research is conducted in collaboration with TOTAL Oil Company, Université Libre de Bruxelles, Université de Pau and Université de Bordeaux I. He has published over 80 journal papers in reputable scientific journals and few book chapters.

For additional information on this seminar you may contact Shadia Al Tamimi at x75380