

ICTAS NEW HORIZONS SEMINAR SERIES

Future Fuels: Developing Tomorrow's Energy

The world as we know it today is heading towards an unsustainable energy future. The present carbon based energy system is insecure, inefficient and certainly unsustainable. Bold change is required in direction of policies, in redirecting and increasing support in search of new energy responding to the escalating increase in energy demand worldwide. One significant characteristic of fuels and energy is that all the issues have become global and the interest in evolving the technologies crosses borders and continents. An important evidence of global thinking in energy and fuels is the Worldwide Fuel Charter (WWFC). This unique document was issued for the first time in 1998 by four global automotive organizations from USA, Europe and Japan, plus 15 other national automotive organizations. The Charter aims to promote understanding of the fuel quality needs world-wide, to satisfy specific needs in accordance with technological development of vehicles.

In a global view, these fuels may be considered in broad categories such as BTL (biomass-to-liquid), CTL (coal-to-liquid) and GTL (gas-to-liquid). The presentation discusses their potential in various parts of the globe and the readiness of introduction into the network of commercial fuels to satisfy energy and transportation needs. A scenario in which global energy and fuels will rely on a combination of two categories is a reasonable prediction for the future: on one hand, the traditional fuels of today evolving in tune with new requirements and appropriate quality; on the other hand, a growing proportion of new fuels; these will be produced either from low carbon feedstock such as advanced biofuels, or from fossil feedstock, that can be converted into syngas and further into superior liquid fuels. Scientists, chemical engineers and researchers will continue to improve liquid fuels because of their excellent energy density, so well suited for internal combustion engines. These engines have served society and technology for over 150 years, and will continue to do so, well in the 21st century.

ABOUT THE SPEAKER



Dr. Rodica A. Baranescu is a professor at University of Illinois at Chicago, Department of Mechanical and Industrial Engineering. Her background is in Mechanical Engineering, Thermal Machines. She holds the MS and the PhD from the Technical University in Bucharest Romania where she was an academic for 13 years, before coming to US. She has done graduate and post-doctoral work at the French Institute of Petroleum and at the University of Wisconsin at Madison. In the US she was working in corporate engine research as a chief engineer and an engineering manager at Navistar Inc. a leading manufacturer of commercial vehicles and low emission internal combustion engines. She has authored numerous technical papers in the field of diesel engines: performance and emission optimization, assessment of alternative fuels for automotive applications, simulation analysis of engine processes, statistical optimization of engine design, etc. She has been an active Fellow member of SAE International since 1980, and in 2000 she was elected as SAE International President, the first woman president of the largest automotive society in the world. Since 2005 she has been working also as a professor at UIC, teaching in the College of Engineering, and directing academic research of graduate students. In 2001 she was elected as a member of the National Academy of Engineering of USA.

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