

Accelerating the Transformation of Building Energy Efficiency

Friday, Feb. 14, 2014

10:00 a.m. – 11:00 a.m.

Building 5100,
JICS Auditorium



Abstract

The U.S. Buildings sector is responsible for approximately 40% of the national energy expenditures. This is mainly due to inefficient use of resources and practices lacking energy efficiency consideration. This seminar discusses the role of science in energy efficiency transformation of the building sector. Scientific discoveries and technology developments result in unmatched energy saving opportunities; examples include phase change material enhancement, ionic liquid optimization for absorption heat pumps, use of nano-pore membranes for heat and mass transfer augmentation, and material discoveries for new heat pump cycles. Dr. Abdelaziz will present an overview of current research initiatives bridging science to realizable energy savings and emission reductions including: evaluation of the minimum energy consumption for residential buildings, advanced water heating technologies, cold climate heat pump technologies, alternative lower global warming refrigerants, and high performance phase change material development. Finally, the seminar will conclude with suggestions of future research initiatives towards sustainable energy production and use in buildings.

Dr. Omar Abdelaziz

is a R&D staff member at Oak Ridge National Laboratory. He is currently on an offsite assignment to DOE where he is working with the Building Technologies Office on technology evaluation and prioritization, and program development. Omar has eight invention disclosures related to energy systems. He is very active in the ASHRAE community; he is the chair for TG1.Optimization and MTG. Low GWP Refrigerants. His research expertise includes transcritical CO₂ refrigeration cycles, thermally activated technologies, advanced and alternative heat pump technologies, alternative refrigerants, magnetic refrigeration, CFD, two-phase flow, and engineering optimization.