



THE OHIO STATE UNIVERSITY

The William G. Lowrie Department of Chemical and Biomolecular  
Engineering Graduate Program Cordially invites you to attend a seminar on  
**Materials to Meet Energy Challenges of Future**

**Alper Uzun**

*Professor*

*Chemical and Biological Engineering*

*Koc University*

*(on sabbatical at SLAC/Stanford University)*

**Thursday, February 1<sup>st</sup>, 11:30 AM**

**130 Koffolt Lab, CBEC 151 W Woodruff Ave**

**Reception at 11:00 AM - CBEC Lobby**

**Bio**

Prof. Alper Uzun received his BS and MS degrees in Chemical Engineering from Middle East Technical University, Turkey. Afterwards, he moved to UC Davis to work with Prof. Bruce C. Gates for his PhD on structure-performance relationships in atomically dispersed supported metal catalysts. After completing his PhD in 2009, he joined Prof. Enrique Iglesia's Research Group at UC Berkeley as a postdoctoral fellow to perform research on the catalysis of C–C bond scissions in naphthenic species. Later, he joined the R&D Center of ConocoPhillips/Phillips 66 as an associate research engineer and worked on the development of novel catalytic technologies to meet the energy needs of the future. He is now a full professor of Chemical and Biological Engineering at Koç University. His current research focuses on catalysis for energy and materials for gas storage/separation. He has co-authored over 100 articles and received prestigious awards, including Scientific and Technological Research Council of Turkey Incentive Award, Turkish Academy of Sciences Outstanding Young Scientist Award, Young Scientist Award of the Academy of Science-Turkey, METU Mustafa Parlar Foundation Research Incentive Award, Sedat Simavi Award, and Koç University College of Engineering Outstanding Teaching and Outstanding Faculty Awards. He is the co-director of Koç University-TÜPRAŞ Energy Center and the associate director of Koç University Surface Science and Technology Center; and serves as the vice president of the Catalysis Society of Turkey. He is currently a Fulbright Scholar having his sabbatical leave at SLAC National Accelerator Laboratory.

**Abstract**

Uzun Lab at Koç University focuses on elucidating the structure-performance relationships on various materials to contribute to the tackling of challenges related to the energy field. In this talk, some of the latest research output from the group will be presented. The first part will cover the results on atomically dispersed supported metal catalysts. Precise control of catalytic properties, including activity, selectivity, and stability, by fine-tuning the environment surrounding the active metal centers will be demonstrated. The second part will present the potential of combining ionic liquids with metal organic frameworks in improving the gas storage and separation performance. The examples to be discussed will cover two different cases: the first one will present the materials prepared by introducing ionic liquids into the pores of metal organic frameworks to tune the adsorption site characteristics; and the second one will cover the case where the external surface of metal organic frameworks is coated with a sheath of ionic liquid to boost the gas separation performance. The results to be presented on this second case will demonstrate how the presence of an ionic liquid sheath acts as a smart gate to allow the passage of desired adsorbate molecules into the pores, while rejecting the others.