

Materials Science & Engineering Program

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The Fundamentals and Role of Defects for Catalytic Applications in TiO₂ and SrTiO₃

The 20th century saw immense advances in the development and fundamental understanding of catalytic reactions for key processes including three-way catalytic conversion, methane reforming, cracking and water gas shift. The changing needs of the 21st century society, however, call for new fundamental insights and integration of this knowledge to develop novel materials for heterogeneous catalysis. Of particular interest, is our synthesis and characterization of smart or intelligent catalysts using defect engineering. In this presentation, I will provide an overview on how our understanding of material defects influence the properties of oxide systems and its relevance for developing advantageous properties for oxide-supported nano-catalysts.

Biosketch

Dr. Kandis Leslie Abdul-Aziz received a B.S. in Chemistry from Temple University and Ph.D. in Chemistry from the University of Illinois, Urbana-Champaign during which she was a Graduate College and Harry Drickamer Fellow. Prior to joining the CEE and MSE department at UC Riverside, she was a Provost postdoctoral fellow at University of Pennsylvania where she developed procedures for synthesizing heterogeneous catalysts using atomic layer deposition. Her research group uses an interdisciplinary tool set from materials and chemical engineering, chemistry and first principles to develop heterogeneous catalysts that will allow for a sustainable future. Initial projects will focus on the valorization of plastic and agriculture waste and the development of smart catalysts for renewable energy generation.

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