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Hosted by the Department of Chemical Engineering

Distinguished Seminar Speaker

Design and Synthesis of Organic Electronic Material

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Abstract: The past two decades have seen a dramatic increase in the number of consumer electronics in use. Previously, most households had a landline phone, one or two televisions, and the occasional desktop computer. These days, most people own numerous electronic devices, resulting in an increased demand for the semiconducting materials that drive this technology and the energy needed to power them. Accordingly, there has been a lot of interest in developing organic semiconductors, as many of the inorganic materials used in these devices are in limited supply. Organic semiconductors are either polymers or small molecules that

feature an extended pi-conjugation. These materials possess many exceptional electronic, optical, and thermal properties and thus are well-suited for applications such as transistors, solar cells, and light-emitting diodes. Unfortunately, several issues must be addressed before real-life products can be developed. Our group focuses on the design and synthesis of new organic semiconductors based on low-cost and/or easily prepared starting materials. Since the properties of organic semiconductors can be readily modified through chemical synthesis, we have turned our attention towards the design and synthesis of novel aromatic building blocks. Our group developed several new materials, including wide-band materials for organic light-emitting diodes and narrow-band gap materials for photovoltaic cells. Our recent work will be presented.

Biography: Dr. Jeffries-EL's research focuses on developing organic semiconductors—materials that combine the processing properties of polymers with the electronic properties of semiconductors. She has authored over 40 peer-reviewed publications and has given over 180 lectures globally. She is a Fellow of the American Chemical Society (ACS), the Association for the Advancement of Science (AAAS), and the Royal Society of Chemistry. She has won numerous awards, including the ACS Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences. She is currently an Associate Editor for Chemical Science. She has also served on the editorial boards for the Journal of Materials Chemistry C and Materials Advances and the editorial advisory boards for ACS Central Science and Chemical and Engineering News. Professor Jeffries-EL is a staunch advocate for diversity and a dedicated volunteer who has served in several activities within the ACS and is currently an elected board of directors member as a director-at-large. She is also a science communicator who seeks to encourage students from underrepresented groups to pursue STEM degrees and recently appeared on the NOVA series Beyond the Elements. She also serves the community through her work with Alpha Kappa Alpha Sorority, Incorporated. She is a native of Brooklyn, New York