Xi ngda Lect ur e

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Title: Enzymatic bioelectrocatalysis: From metabolic pathways to metabolons

Abstract: Oxidor eductase enzymes have been employed for almost 5 decades in biosensors and for energy conversion in the form of biofuel cells. However, most enzymatic bioelectrodes in the literature utilize complex biofuels (e.g. glucose), but only partially oxidize the complex biofuel via the use of a single enzyme (i.e. glucose oxidase or glucose)

dehydrogenase). This presentation will detail the use of enzyme cascades at bioanodes for deep to complete oxidation of substrates to improve performance (current density and power density), but will focus on the importance of forming metabolons for substrate channeling in multi-enzyme cascades. These enzyme cascades will include natural metabolons (i.e. the Kreb's cycle) and artificial metabolons utilizing DNA and peptides as scaffolds. It will discuss the importance of structural orientation of enzymes and enzyme complexation in enzymatic cascades for efficient bioelectrocatalysis.

Short resume: Dr. Shelley Minteer is a USTAR Professor in both the

Departments of Chemistry and Materials Science and Engineering at the University of Utah. She received her PhD in Analytical Chemistry at the University of Iowa in 2000 under the direction of Professor Johna Leddy. After receiving her PhD, she spent 11 years as a faculty in the Department of Chemistry at Saint Louis University before moving to the University of Utah in 2011. She also was a Technical Editor for the Journal of the Electrochemical Society and is now an Associate Editor for the Journal of the American Chemical Society. She has published greater than 250 publications and greater than 350 presentations at national and international conferences and universities. She has won several awards including the Luigi Galvani Prize of the Bioelectrochemical Society, the Missouri Inventor of the Year, International Society of Electrochemistry Tajima Prize, Fellow of the Electrochemical Society, and the Society of Electroanalytical Chemists' Young Investigator Award. Her research research interests are focused on electrocatal ysis and bioanal ytical electrochemistry. She has expertise in biosensors and bioelectronics.

Sel ect ed Publ i cat i ons

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