

Bioelectrosynthesis

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Bioelectrosynthesis is the field of using biological catalysts as electrocatalysts for organic electrosynthesis. This talk will discuss microbial and enzymatic approaches of bioelectrosynthesis. We will discuss the use of enzymes and enzyme cascades via both direct and mediated bioelectrocatalysis to make value-added products ranging from hydrocarbons to ammonia to chiral amines and polymers. These enzymatic bioelectrosynthesis systems will be compared and contrasted to microbial electrosynthesis for the same and similar value-added products. There will be a discussion of materials design and engineering for these applications, as well as enzyme engineering and synthetic biology opportunities in this field. Finally, there will be a discussion of characterization techniques for studying bioelectrosynthesis.