



## **Designing Amperometric Biosensors and Smart Contact Lenses Utilizing Redox Polymer Systems**

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**Abstract:** Over the last three decades, amperometric biosensors for glucose have been engineered for improved selectivity and stability using osmium redox polymers as second generation biosensors. This talk will focus on the rational design of organic redox polymers for biosensors and smart contact lens systems. This will include mediation of new classes of enzymes, including: FAD-dependent glucose dehydrogenase, PQQ-dependent glucose dehydrogenase, nitrogenase, hydrogenase, and lactate oxidase enzymes, as well as a discussion of the molecular flexibility of rationally design organic redox polymers for mediated bioelectrocatalysis. Performance of quinone redox polymers will be compared to ferrocene redox polymers and osmium redox polymers to show the advantages of rational design in improving biosensor sensitivity and performance. Viologen and TEMPO redox polymers will also be discussed. Finally, we will show the ability to utilize mediated bioelectrocatalysis for smart contact lens applications.

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