Special Issue

Electrochemical Sensors for Neuroscience: Design, Fabrication and Performance

Message from the Guest Editor

The development of multiplexed neural probes for real-time in vivo sensing of neurochemicals is a critical step in the study and effective treatment of brain disorders. Abnormal neurochemical signaling is an underlying signature of many devastating brain dynamical disorders. Therefore, it is critical to be able to understand and monitor the long-term spatiotemporal dynamics of the key neurochemicals in the brain whose dysregulation contributes to these disorders. With the advent of modern engineering materials and micro–nanofabrication science, electrochemical sensors can be easily miniaturized into microarrays for multiplexed neurochemical detection with excellent spatial-temporal resolution. However, challenges exist in operating the sensors reliably and chronically with minimal fouling and inflammation in challenging environments such as the brain itself. This Special Issue will focus on the design, fabrication, testing, and optimization of electrochemical sensors that involve novel designs, new transduction mechanisms, new material and coating integration strategies, and multifunctionality with applications to neuroscience.

Guest Editor

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