**MXenes-based Bioanalytical Sensors: Design, Characterization and Applications**

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MXenes are an emerging class of 2D layered nanomaterials that provide large surface area, hydrophilicity, high ion transport properties, low diffusion barrier, biocompatibility and ease of surface functionalization. Due to their unique features, MXenes have gained substantial attention in fields such as batteries and supercapacitors and their application in chemical and biological sensors is growing. Their composition and layered structure makes MXenes particularly attractive for biosensing applications. This presentation will discuss the use and application of MXenes in the development of electrochemical biosensors as an immobilization matrix, signal transducer and amplifier of biomolecular recognition. An example of a portable MXenes-based biosensing platform fabricated in our lab for detection of glucose will be illustrated in which Ti3C2 MXenes was used as transducer surface and supporting material for the immobilization of the glucose oxidase enzyme. Opportunities for developing wearable sensors and systems with integrated biomolecule recognition will be highlighted.