**Creating Biomimetic Functional Materials**

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Biological systems exhibit unparalleled diversity in terms of structure and function. Using a limited palette of materials, biosystems have evolved functions such as specific molecular interactions, transducing energy, communicating with other cells, self-assembling 3D structures and creating hybrid structural materials. The unique and diverse functions of biomaterials provide many opportunities in developing concepts, as well as new classes of materials and devices for both military and civilian applications. In my talk I will cover our fundamental work on modulating interfacial interactions between biotic and abiotic materials to integrate biological elements into nanomaterials for controlling physiochemical properties reconfiguring material assembly and in the design of biosensors. In addition, I will also highlight the use of bio-enabled assembly of multifunctional (nano)materials for catalysis and energetic applications.