

## Incorporation of amino acids into inorganic crystalline hosts: from biomineralization to bio-inspired band gap engineering

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In the course of biomineralization, organisms produce a large variety of functional biogenic crystals that exhibit fascinating mechanical, optical, magnetic and other characteristics. More specifically, when living organisms grow crystals they can effectively control polymorph selection as well as the crystal morphology, shape, and even atomic structure. Materials existing in nature have extraordinary and specific functions, yet the materials employed in nature are quite different from those engineers would select.

One special feature of such crystals is the entrapment of organic molecules within the inorganic crystalline host. Here I will show how we have taken this principle and translated it to bio-inspired crystal growth to control the electronic properties of various semiconductors.

Some examples include: ZnO and Cu<sub>2</sub>O and hybrid perovskites [1-3]. I will discuss the incorporation mechanisms, the effect on crystal structure and the relation to manipulation of electronic properties.

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