Special Issue

Catalytic Nature of Quantum Dots: Relationship and Applications

Message from the Guest Editors

Quantum dots (QDs) are semiconductor nanocrystals with a size smaller than the Bohr radius of the corresponding bulk materials. QDs show different physical and chemical properties from those of bulk materials, which is mainly manifested in the quantum confinement effect and surface effect. These effects further yield adjustable band gaps and unique photoelectric properties of QDs, making them good candidates in photo- and photoelectrochemical catalysis. Specifically, QDs have been reported for hydrogen evolution, CO2 reduction, biomass reforming, organic synthesis, ammonia synthesis, degradation of pollutants, and so on, demonstrating their promising prospects. The detailed catalytic nature of QDs deserves further exploration, which is the purpose of this Special Issue.

Keywords:

- quantum dots
- photocatalysis
- artificial photosynthesis
- CO2 reduction
- H2 evolution

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