The Selective Adhesion Method for Nanocrystal Shape Control

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The shape of a nanocrystal can be controlled by growing the crystal in the presence of an organic molecule that selectively adheres to one crystallographic facet, effectively reducing the growth rate of that facet compared to others. This method of shape control has been applied to CdSe, CdTe, Co, iron oxides and titanium dioxide. In each case, a variety of shapes can be prepared, including rods, disks, and branched structures. Common principles about how to create the different shapes are emerging based on the comparisons between the several systems. These nanocrystals form a set that can be used to create a wide variety of composites that are interesting from an electrochemical point of view, for instance solar cells.