Synthesis of metal oxide nanocrystals: a critical analysis

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Metal oxides represent an important class of materials with a variety of technological applications and the development of nanocrystals based on this class of materials can results in devices and materials with superior performance. Compared to the control attained in the synthesis of metal and II-IV semiconductor nanocrystals, the control of metal oxide nanocrystal is still in its earliest stage. In this work we will shows the progress achieved in the past 5 years, considering size and morphological control, for the synthesis of different metal oxides (TiO2, SnO2, Nb2O5, ZrO2, In2O3-Sn, SnO2-Sb) in water solution and in organic solvents. A critical analysis of the different synthesis approaches will be presented, as well as the advantage of the synthesis in organic solvent.