The effect of sodium hydroxide on synthesis of oxide nanocrystals

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Rare earth oxide nanomaterials have been widely investigated in industrial field because of magnetic, optical, electrical, and nuclear properties such as up-conversion materials and catalysts. In this research, we synthesized various lanthanide oxide nanocrystals using sodium hydroxide solution. Various analyses were employed to characterize the oxide nanocrystals, and the results showed that the hydroxide and oxide nanorods displayed with the same rod shape and high crystallinity. The synthesized nanocrystals have a rod shape and stable properties due to a high surface-to-volume ratio. Also we suggest mechanism for the formation of nanorods by effect of sodium hydroxide. Finally, the kinetics of ionized precursor precipitation reactions in aqueous solutions was proposed in this research.

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