Journal of Solid State Chemistry 251 (2017) 143–163

Contents lists available at ScienceDirect

Journal of Solid State Chemistry

journal homepage: www.elsevier.com/locate/jssc

# Controlled synthesis of titania using water-soluble titanium complexes: A review

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ARTICLE INFO

*Keywords:*
Titanium complexes
$TiO_2$
Nano-materials
Synthetic method
Water-soluble compounds
Precursor

ABSTRACT

The development of human society has led to the increase in energy and resources consumption as well as the arising problems of environmental damage and the toxicity to the human health. The development of novel synthesis method which tolerates utilization of toxic solvents and chemicals would fulfill the demand of the society for safer, softer, and environmental friendly technologies. For the past decades, a remarkable progress has been attained in the development of new water-soluble titanium complexes (WSTC) and their use for the synthesis of nanocrystalline titanium dioxide materials by aqueous solution-based approaches. The progress of synthesis of nanocrystalline titanium dioxide using such WSTCs is reviewed in this work. The key structural features responsible for the successfully controlled synthesis of $TiO_2$ are discussed to provide guidelines for the morphology-controlled synthesis. Finally, this review ends with a summary and some perspectives on the challenges as well as new directions in this fascinating research.