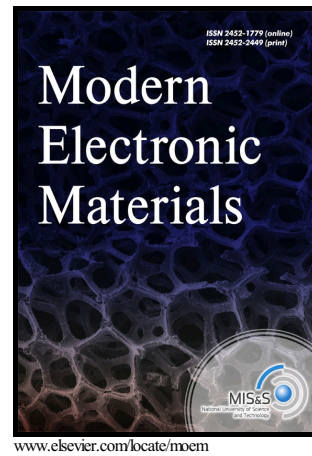


## Author's Accepted Manuscript

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PII: S2452-1779(17)30053-1  
DOI: <https://doi.org/10.1016/j.moem.2017.10.002>  
Reference: MOEM67

To appear in: *Modern Electronic Materials*

Received date: 10 August 2017  
Revised date: 14 October 2017  
Accepted date: 26 October 2017

Cite this article as: S. Muniyappan, T. Solaiyammal, K. Sudhakar, A. Karthigeyan and P. Murugakoothan, Conventional hydrothermal synthesis of titanate nanotubes: Systematic discussions on structural, optical, thermal and morphological properties, *Modern Electronic Materials*, <https://doi.org/10.1016/j.moem.2017.10.002>

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**Conventional hydrothermal synthesis of titanate nanotubes: Systematic discussions on structural, optical, thermal and morphological properties**

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**Abstract**

Titanate nanotubes were successfully synthesized by hydrothermal technique under acidic-base medium. The anatase and titanate phase of the starting TiO<sub>2</sub> and tubular titanate was confirmed by powder XRD technique. The UV-vis-NIR spectroscopy was used to study the absorption nature of titanate nanotubes and the band gap was calculated as 3.3 eV. Infrared technique was employed to detect the presence of all the functional groups in the synthesized titanate nanotube material. Thermal properties of the title material were studied by TG-DTA analyses. The shrinkage of interlayer distance of TiO<sub>2</sub> network confirms the nanotube formation. Morphology and size information about the synthesized material were carried out using FESEM and TEM analysis. Titanate nanotubes are having the maximum length of 2.24 μm and the average diameter of 169.73 nm. EDX analysis gives out the elemental composition of the as

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