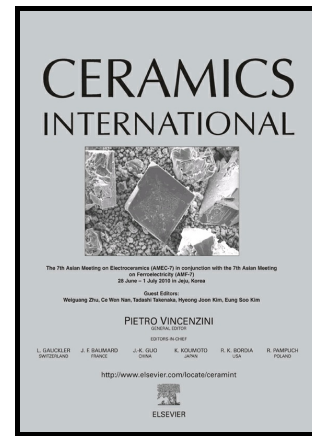


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**Microwave Assisted Synthesis of Perovskite Structured BaTiO₃ Nanospheres via Peroxo
Route for photocatalytic Applications**

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Abstract

A novel perovskite structured barium titanate (BaTiO₃) nanopowder was successfully synthesized at low temperature by a facile and an inexpensive microwave method. The synthesized nanosphere shaped BaTiO₃ was analyzed using advanced characterization techniques such as X-ray diffraction analysis, Fourier transform infrared, Micro Raman, Scanning electron microscope with energy dispersive analysis and ultraviolet-visible diffuse reflectance spectroscopic techniques. Photocatalytic dye degradation study was carried out using newly synthesized BaTiO₃ catalyst. The synthesized sphere shaped barium titanate nanopowders effectively degrade the various dyes such as Methylene Blue (MB), Malachite Green (MG) and Alizarin Red S (ARS) under UV light irradiation. The band gap energy of synthesized BaTiO₃ was calculated by UV-DRS spectra using Kubelka-Munk equation. The higher dye decomposition efficiency of nearly 100% was successfully achieved by BaTiO₃ (BT10) nanosphere which was prepared using 10 min microwave irradiation.

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