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## Sm<sub>2</sub>O<sub>3</sub> NANOPARTICLES GREEN SYNTHESIS VIA CALLISTEMON VIMINALIS' EXTRACT

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### Abstract

In this contribution, it is demonstrated for the first time in the literature the possibility of synthesizing Sm<sub>2</sub>O<sub>3</sub> nano-scaled particles as small as  $\langle \phi_{\text{particles}} \rangle \sim 21.9 \pm 5$  nm using an entirely new green process. This latter is based on the usage of natural extract of the *Callistemon viminalis* as a strong chelating agent at room temperature. The selected area electron diffraction and the high resolution transmission electron microscopy confirmed the polycrystallinity of the Sm<sub>2</sub>O<sub>3</sub> nano-particles upon annealing at 500 °C. The complementary investigations by X-rays diffraction, infrared, Raman and X-Rays photoelectron spectroscopy substantiated the single phase and the elemental purity of the Sm<sub>2</sub>O<sub>3</sub> nano-particles.

### Keywords:

Samarium (III) Oxide, nanoparticles, green chemistry, *Callistemon viminalis*.

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