

# Hydrothermal Synthesis and Structural Properties of V<sub>2</sub>O<sub>5</sub> Nanoflowers at Low Temperatures

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**Abstract.** Vanadium pentoxide nanoflowers were synthesized through a simple hydrothermal method at low temperatures. The structure was fabricated by using NH<sub>4</sub>VO<sub>3</sub> and oxalic acid as precursors with 0.1 M solution concentration. The morphology and structural properties of the nanoflowers were characterized using FESEM, XRD, Raman, and UV-Visible spectroscopy. The results reveal an orthorhombic structure with preferred orientation along (001) plane of the prepared V<sub>2</sub>O<sub>5</sub> nanoflowers. Raman peaks also expressed the same structural features. FESEM images showed the V<sub>2</sub>O<sub>5</sub> nanoflower with diameters in the range of 60-80 nm and length in 600-800 nm. A red-shift was observed in the characteristic absorption peak of V<sub>2</sub>O<sub>5</sub> nanoflowers, which are attributed to the decrease of the bandgap of the samples.