

Characterization of the one-dimensional growth of V_2O_5 nanofibers

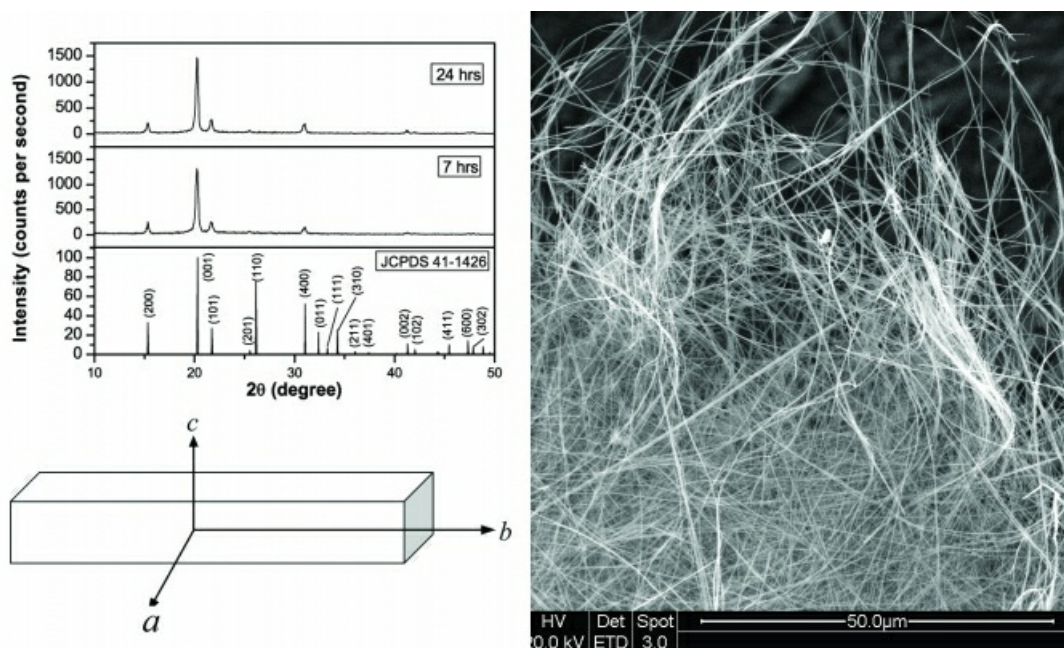
Khemchand Dewangan¹

¹Department Of Chemistry, Indira Gandhi National Tribal University, Amarkantak (M, Amarkantak, India
E-mail: dewangankc@gmail.com

Highly crystalline one dimensional V_2O_5 nanofibers was synthesized by using a simple and direct hydrothermal technique at 220 °C of 7–24 hrs reaction times. Structural study by powder X-ray diffraction pattern shows that synthesized V_2O_5 has highly crystalline in nature possessing an orthorhombic phase that have grown along the [010] direction of forming nanofibers (Fig 1). Morphology study by FESEM and TEM of V_2O_5 further confirm the formation of nanofibers where nanofibers are up to several micrometers long and 20–25 nm thick. The SAED pattern recorded perpendicular to growth axis of the V_2O_5 nanofibers shows spot pattern which could be attributed to the [001] zone-axis diffraction orthorhombic phase proving the crystalline nature of V_2O_5 nanofibers. Finally, in a HRTEM image the lattice fringes with a spacing of 4.06 matching to the (101) plane of V_2O_5 evidently proving information that the nanofiber has grown along the [010] direction, this is also in good agreement with the XRD outcomes.

[1] Dewangan, K. et al. (2012). *Nanoscale* 4, 645-651.

[2] Takahashi, K et al. (2004). *J. Phys. Chem. B*, 108, 9795–9800.



Keywords: [V2O5](#), [Nanostructure](#)