Electronic Supplementary Material (ESI) for RSC Advances.

Modified Hydrothermal Reaction (MHT) for $CoV_2O_6.4H_2O$ Nanowire formation and its transformation to $CoH_4O_8V_2$ Single-crystal for antiferromagnetic ordering and spin-flop

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Experimental section

Materials:

All the reagents were analytically pure. $CoCl_2$, NH_4VO_3 were procured from E-Merck were used as received. Double distilled water was taken to prepare all the stock solutions. Beakers and other glasswares (capacity 15 mL) were purchased from Blue Star India and they were cleaned with aqua regia, water and dried prior to their use.

Analytical Instrument:

The chemical compositions of the nanomaterials were inspected by Powder X-ray diffraction (XRD). It was recorded using a PW1710 diffractometer, a Philips, Holland, instrument. The XRD data were checked by taking (JCPDS) software. Reflectance spectra were measured using DRS (Diffuse Reflectance Spectra) mode by a Cary model 5000 UV-vis-NIR spectrophotometer. The morphology was authenticated using Field emission scanning electron microscopy (FESEM, supra 40, Carl Zeiss Pvt. Ltd. instrument) and an energy-dispersive X-ray microanalyzer (Oxford ISI 300) was attached to the scanning electron microscope for compositional analysis. Transmission electron microscopy (TEM) was carried out with an H-9000 NAR instrument, Hitachi, using an accelerating voltage of 300 kV to understand the morphology, SAED pattern and fringe spacing.

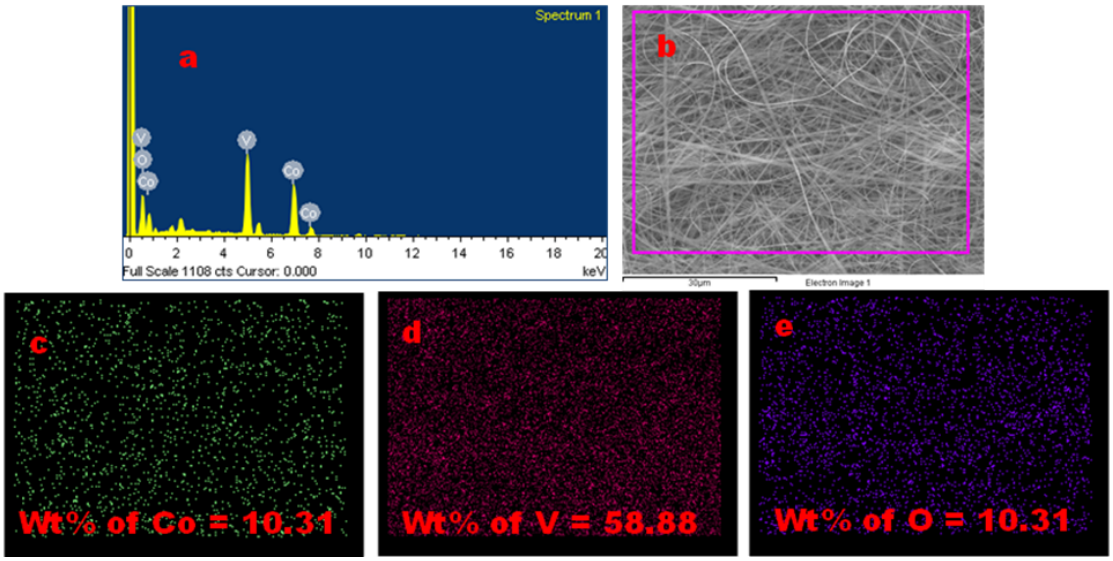

Figure S1: (a) EDS spectrum of $CoV_2O_6.4H_2O$ nanowire; (b) scan area shows area mapping for the element (c) Co, (d) V, (e) O.

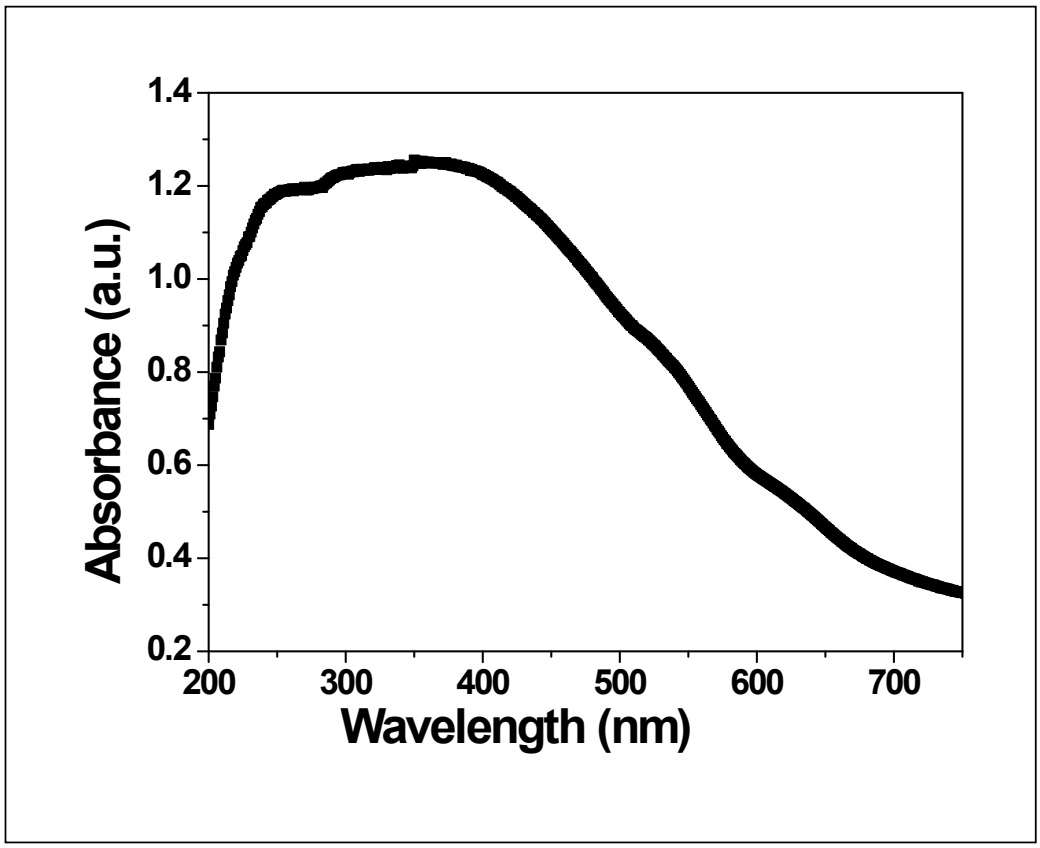

Figure S2: DRS spectrum of $CoV_2O_6.4H_2O$ nanowire.

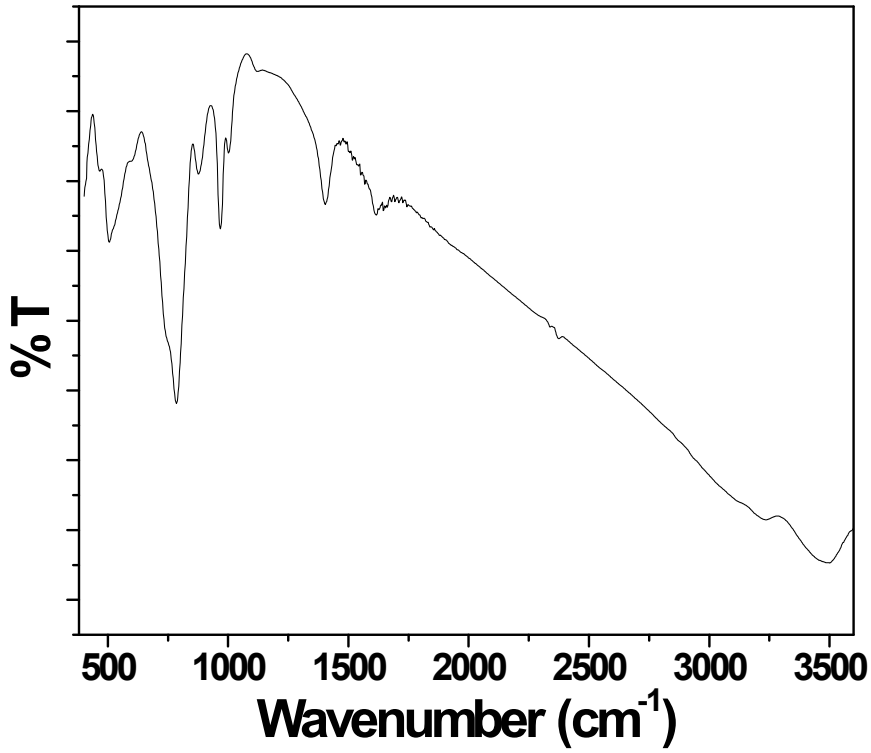

Figure S3: FTIR spectrum of $CoV_2O_6.4H_2O$ nanowire.