

## Poster Presentation

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*New series of vanadium doped hexagonal tungsten bronze,  $M_xW_{1-y}V_yO_3$*

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Attempts were taken to synthesize vanadium doped rubidium and cesium hexagonal tungsten bronze samples with nominal composition  $M_xW_{1-y}V_yO_3$  ( $x = 0.30, 0.25$  and  $0.0 \leq y \leq x$ ). The samples were synthesized by solid state synthesis method at 700 °C in an evacuated silica glass tube. X-ray diffraction data of  $M_xW_{1-y}V_yO_3$  reveal that pure hexagonal tungsten bronze (HTB) phase could be formed up to  $y = 0.18$  and  $y = 0.15$  for  $x = 0.30$  and  $x = 0.25$  series, respectively revealing 60% of replacement of  $W^{5+}$  by  $V^{5+}$ . Rietveld structure refinement of XRD data also reveal the systematic incorporation of vanadium in the HTB lattice and shortening of the V/W-O bond distances within the xy plane and elongation in the crystallographic c direction. FTIR absorption spectra of the oxidized phases also support the XRD results. Moreover, there develop an absorption feature as a function of y and shows a significant increase of its intensity with gradual replacement of  $W^{5+}$  by  $V^{5+}$ , indicating a significant decrease in the metallic like contribution and reveals nonmetallic nature of the compounds. Elemental analysis show excellent agreement with their nominal ones indicating that a systematic incorporation of vanadium in  $M_xW_{1-y}V_yO_3$  system.

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