Synthesis and characterization of vanadium doped alkali metal tungsten bronzoid

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Attempts were made to prepare a series of vanadium doped alkali metal hexagonal tungsten bronzoid, $AxV_xW_{1-x}O_3$ (A= K; Cs and $x = 0.15-0.30$), at comparatively low temperature by organic precursor method. The prepared samples were characterized by X-ray powder Diffraction, Fourier Transform Infrared spectroscopy, Energy-dispersive X-ray analysis and Scanning Electron Microscopy. XRD data of $AxV_xW_{1-x}O_3$ reveals that pure hexagonal tungsten bronzoid phase could be formed at 400°C by this method. However, a second unknown phase along with the hexagonal bronzoid phase appeared with $x = 0.30$ composition when annealed at higher temperature.

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