Synthesis of Self-Supporting WO_3 Multidimensional Networks

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ABSTRACT

Self-supporting WO_3 multidimensional networks, which look like foams, have been synthesized by means of concentrating a solution containing hydrogen peroxide, methanol, peroxo-polytungstic acid and poly(n-vinylpyrrolidone) (PVP). The as prepared and calcined WO_3 networks have been characterized by SEM, powder XRD, TG, and N_2 adsorption (BET) techniques. The Optical photograph of as-prepared WO_3 and the SEM images of calcined WO_3 revealed that it possesses multidimensional networks. The XRD spectrum of the WO_3 exhibits that the as-prepared sample is amorphous, and the calcined one is the orthorhombic structure. The TG analysis indicated that the PVP contained in as-prepared WO_3 networks started decomposing at 300°C and ended at 500°C. The nitrogen adsorption/desorption analysis showed a type IV isotherm for calcined WO_3 networks.

Keywords: Synthesis, WO_3, self-supporting and networks

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