

Effect of different mineralizers in the sonochemical synthesis of self-assembled nanorods vanadium oxide

ABSTRACT

The effects of different potassium salts (KNO_3 and KCl) as mineralizer on the synthesis of self-assembled nanorods vanadium pentoxide, V_2O_5 via sonochemical treatment were studied at different duration i.e., 30, 60, 90 and 120 min. All the materials synthesized were further characterized by x-ray diffraction, scanning electron microscopy and transmission electron microscopy. X-ray diffraction patterns revealed that the potassium ion from the mineralizers reacted with the V_2O_5 after prolonged sonochemical treatment duration. The morphology of the V_2O_5 changed from platelet-like structures into nanorods after 90 min of sonochemical treatment. TEM micrographs show the process of formation of the self-assembled V_2O_5 nanorod bundles with increased sonochemical treatment duration.

Keyword: Sonochemical treatment; Mineralizer; Vanadium oxide; Nanorods