

**OPTIMIZATION OF THE SURFACE AREA OF V<sub>2</sub>O<sub>5</sub> NANOCRYSTALS THROUGH NUMBER OF WASHING**

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**ABSTRACT**

In this study, vanadium pentoxide, V<sub>2</sub>O<sub>5</sub> were synthesized by precipitating ammonium vanadate with ammonium hydroxide in increasing pH method. The solid precipitates obtained were then subjected to different number of washing and its effect on the microstructural properties of V<sub>2</sub>O<sub>5</sub> was studied. TGA result suggested that 500 °C was the best temperature to transform the precursor into the desired products. This has been confirmed by the XRD result of calcined samples which showed diffractograms matched perfectly with V<sub>2</sub>O<sub>5</sub> phase. The V<sub>2</sub>O<sub>5</sub> particles sizes were in nanometre range between 24 – 62 nm. SEM morphology revealed that the particles showed rectangular shape before and after calcined with holes and cracks surfaces compared to a rather smooth surface in the precursor. This suggested that upon heat treatment, all the impurities have been successfully eliminated and in doing that, they left holes and cracks. Specific surface area, SBET of the unwashed sample gave highest value (6.1m<sup>2</sup>g<sup>-1</sup>) compared to the others samples. The low SBET value for the latter sample was probably due to peptization process occurred during the washing step.

**<http://journal.masshp.net/wp-content/uploads/Journal/2007/Jilid%202/Woi%20Pei%20Meng%20128-133.pdf>**

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