

## **Physicochemical Properties of MoVTeNb Mixed Oxide Catalysts Synthesized using Different Vanadium Sources**

### **ABSTRACT**

The use of different vanadium sources in the synthesis of multi-metal MoVTeNb oxide catalysts has been investigated for their effect on the physicochemical properties of catalysts. Metal oxides were synthesized by slurry method assisted with a microwave irradiation. Vanadium pentoxide ( $V_2O_5$ ), vanadyl sulphate ( $VOSO_4$ ) and ammonium metavanadate ( $NH_4VO_3$ ) were used as the vanadium sources, respectively. X-ray diffraction (XRD) pattern showed the existence of orthorhombic (M1) phases in all catalysts. The catalyst prepared using  $V_2O_5$  produced the highest formation of the phase. This was further supported by Inductive Couple Plasma-Atomic Emission Spectroscopy (ICP-AES), which showed that the  $V_2O_5$  catalyst has the highest V: Mo ratio, mainly responsible for the high catalytic activity. Temperature Programmed Reduction in Hydrogen ( $H_2$ -TPR) showed better reducibility for the catalyst when compared to the others. Temperature Programmed Reaction (TPRn) confirmed that the oxidants active for propane conversion into acrylic acid were originated from the lattice of the catalyst.