

## Morphology and structure of vanadium phosphate oxides prepared using water as a solvent

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Vanadium phosphorus oxides were prepared from  $V_2O_5$  and  $V_2O_4$  in the presence of pyro-, ortho-phosphoric acid in water and were refluxed in distilled water. Under certain controlled reaction conditions (e.g. time and temperature), high surface catalysts can be prepared. TEM and SEM techniques were used to characterise their morphology and to evaluate the microstructure of the investigated catalysts. The precursor samples consist of typical rhomboidal crystallites, Fig.1. Representative electron diffraction pattern from the precursor, inset in Fig.1, confirms the  $VOHPO_4 \cdot 0,5H_2O$  phase. After the activation procedure, the catalysts consist of smaller particles of different shapes, mainly  $(VO)_2P_2O_7$  with some  $\alpha_{II}$ - $VOPO_4$  crystallites, Fig.2. Inset in Fig.2 shows electron diffraction taken from the vanadium pyrophosphate particle. Water can be used as a solvent in the preparation of VPOs and the positive influence of the water reflux step on the surface area is observed.

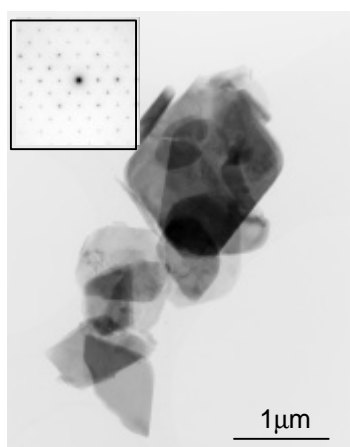


Fig. 1 TEM image of a precursor

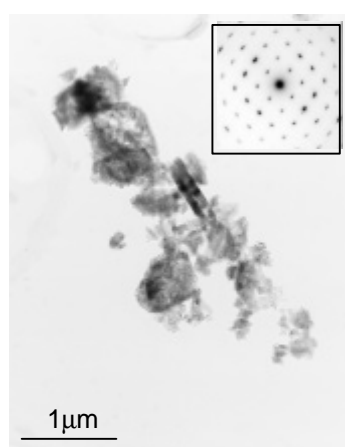


Fig.2 TEM image of a catalyst