



## **Tribochemical Modification of Bi- promoted VPP Catalyst**

**D.S. Su**

Department of Inorganic Chemistry,  
Fritz-Haber-Institute of the Max-Planck Society,  
Faradayweg 4-6, D-14195 Berlin

Ball milling of  $V_2O_5$  and VPP has been reported as an effective, alternative method for the preparation and activation of catalysts for selective oxidation reactions. Recently, in searching the correlation between structure and function of vanadium-based catalyst, we re-investigated tribochemically modified VPP catalysts. For this purpose, X-ray powder diffraction (XRD), conventional and high-resolution transmission electron microscopy (TEM and HRTEM), scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDXS) and electron energy-loss spectroscopy (EELS), are used to elucidate the effects of ball milling on the morphology of  $VOHPO_4 \cdot 0.5H_2O$  (VHP). The precursor, VHP was milled in different medium (water, ethanol and air) and at different milling time (from 2 to 30 minutes). These were compared with samples thermally activated in vacuum and *n*-butane/air gas mixture. Besides the expected effects of tribochemical activation such as the break down of the particles, reducing of the particle size and narrowing of its distribution, agglomeration and phase transition of particles, we find also interesting, partly dubious results that challenge the well accepted validity and advantage of tribochemical activation and raise new questions in the VPP research.