Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

SUPPORTING INFORMATION

Interconversion between Lewis and Brønsted-Lowry acid sites on vanadia-based catalysts

Rob Jeremiah G. Nuguid[1,2], Lorenzo Ortino-Ghini[1,3], Vitaly L. Suskevich[1], Jie Yang[1,4], Luca Lietti[3], Oliver Kröcher[1,2], Davide Ferri[1,*]

[1]Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland

[2]Institute of Chemical Sciences and Engineering, École polytechnique fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland

[3]Department of Chemistry, Politecnico di Milano, 20133, Milan, Italy

[4]College of Materials Science and Engineering, Chongqing University, Chongqing 400044, China

* Corresponding author: davide.ferri@psi.ch

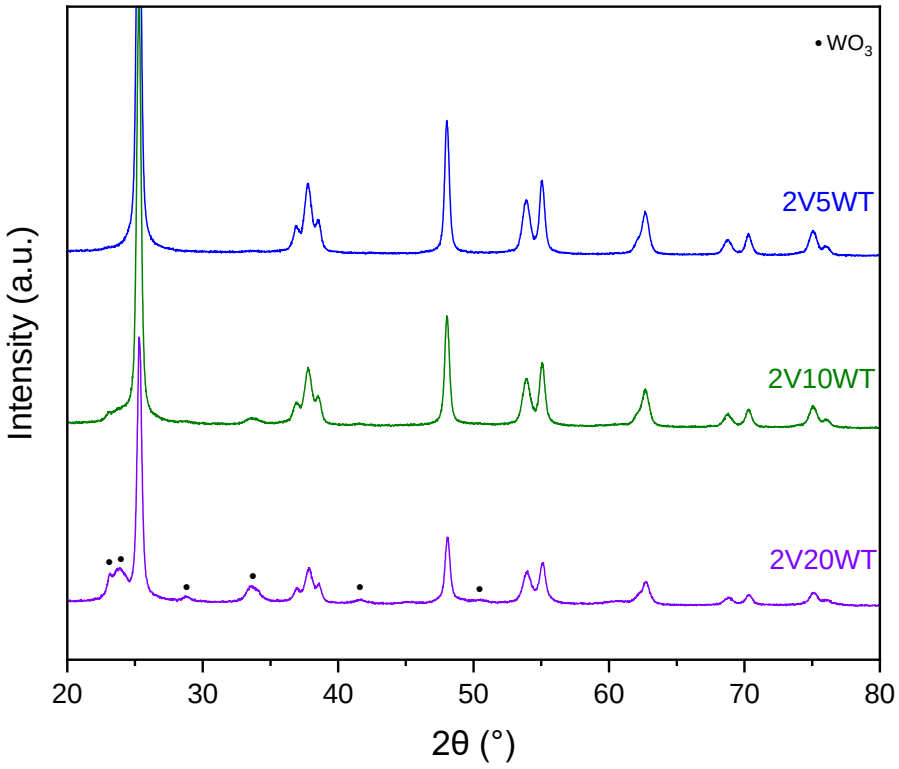

Fig. S1. Powder XRD of 2V5WT, 2V10WT, and 2V20WT.

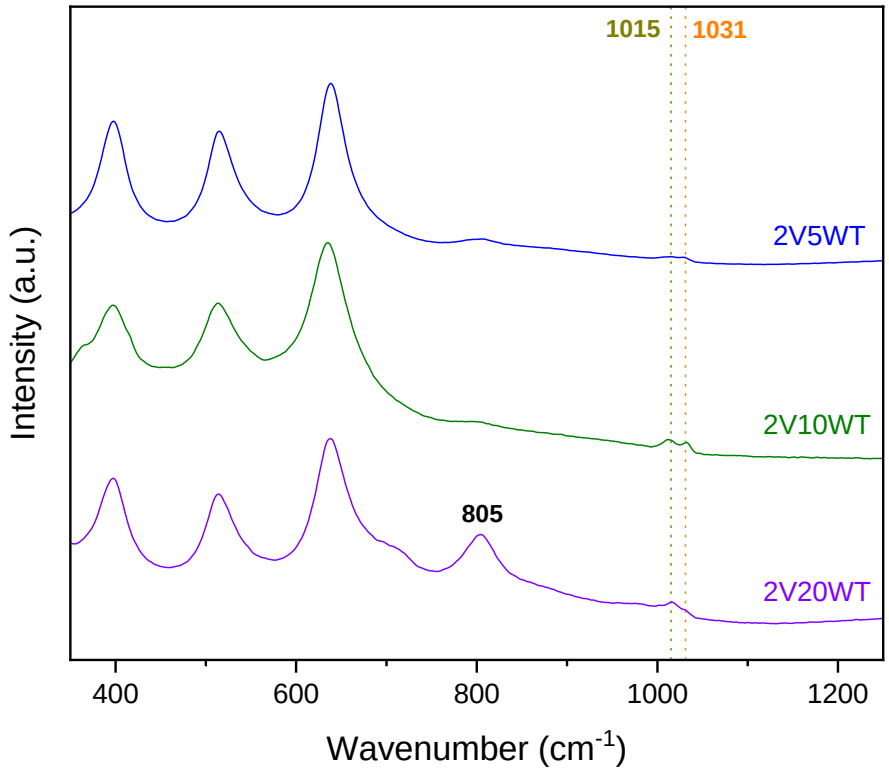

Fig. S2. Raman spectra of 2V5WT, 2V10WT, and 2V20WT under 5 vol% O_2 balanced in Ar at 250 °C. The vibrations at 1031 and 1015 cm^{-1} are the stretching modes of V=O and W=O groups, respectively, while the vibration at 806 cm^{-1} belongs to bulk WO_3.

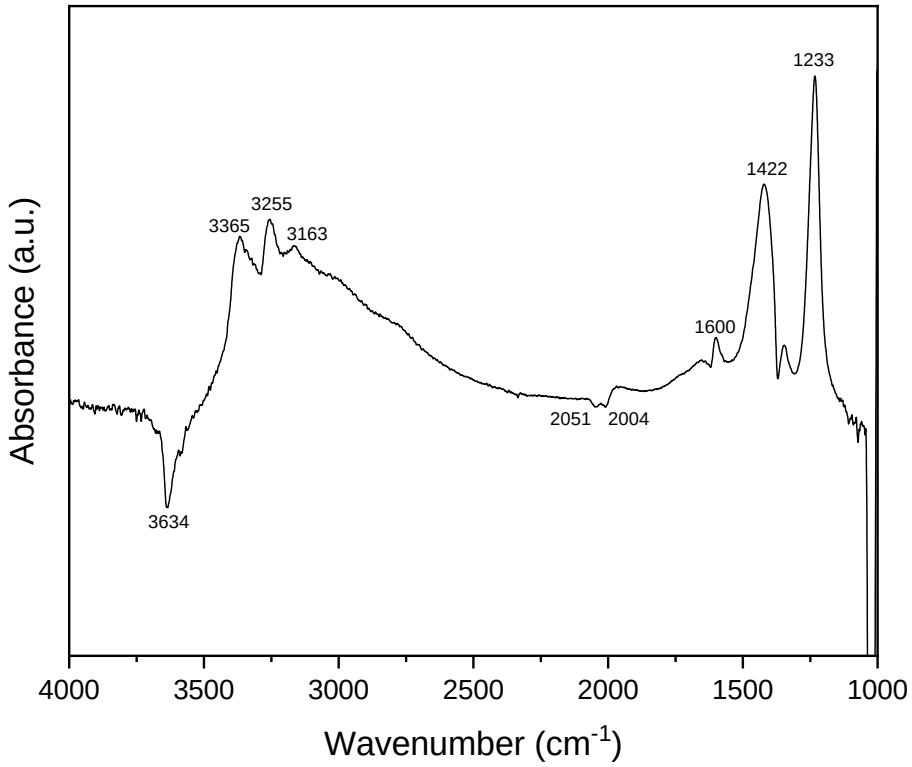

Fig. S3. Transmission IR spectrum of 2V10WT under 1000 ppm NH_3 and 5 vol% O_2 balanced in Ar at 400 °C. The vibrations are assigned in the main text.

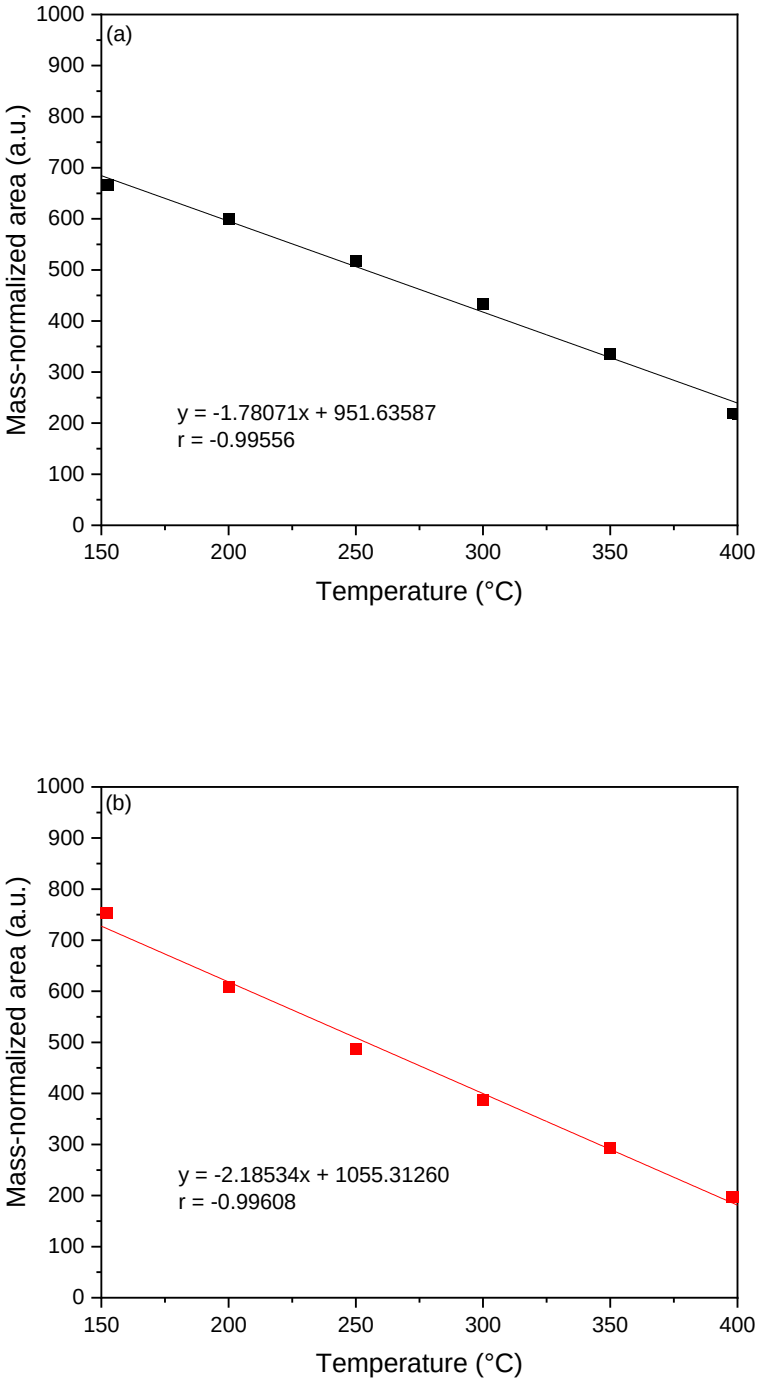

Fig. S4. Linear fitting of the mass-normalized areas of (a) LAS and (b) BAS as a function of temperature.

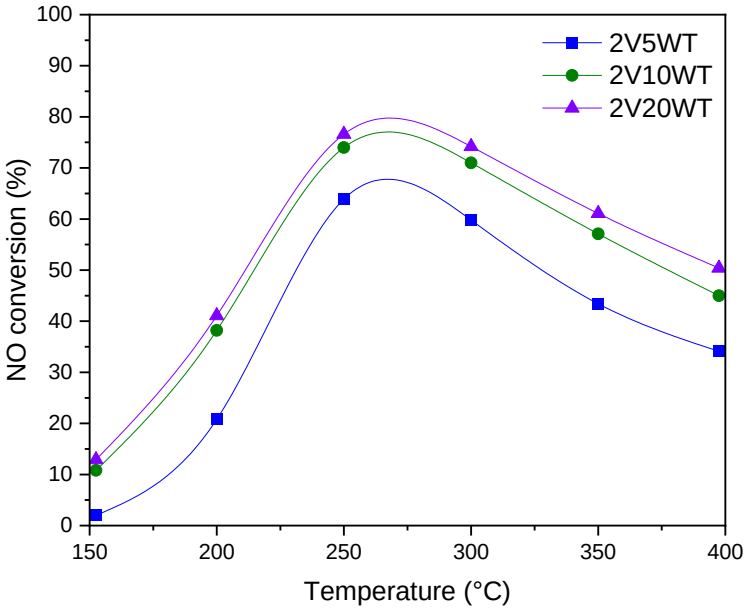

Fig. S5. NO conversion of 2V5WT, 2V10WT, and 2V20WT in the spectroscopic cell. Experimental conditions: 1000 ppm NO, 1000 ppm NH_3, 5 vol% O_2 balanced in Ar.