Supporting Information

Selective catalytic reduction of NO_x with H_2 for exhausts of hydrogen engines: Impact of H_2O, O_2, and NO/H_2-ratio

*Michael Borchers‡, Kevin Keller‡, Patrick Lott, Olaf Deutschmann**

Institute for Chemical Technology and Polymer Chemistry, Karlsruhe Institute of Technology (KIT), Engesserstr. 20, 76131 Karlsruhe, Germany

*deutschmann@kit.edu

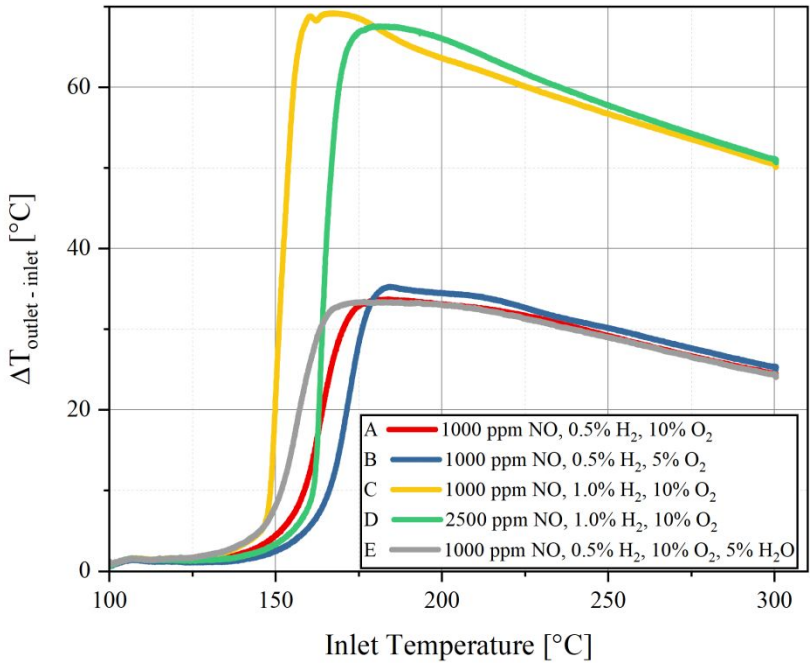

Figure S1. Difference between inlet and outlet temperature of the 1%Pd/5%V_2O_5/20%TiO_2-Al_2O_3 monolith during the light-off experiments with gas mixtures A-E (Table 1).

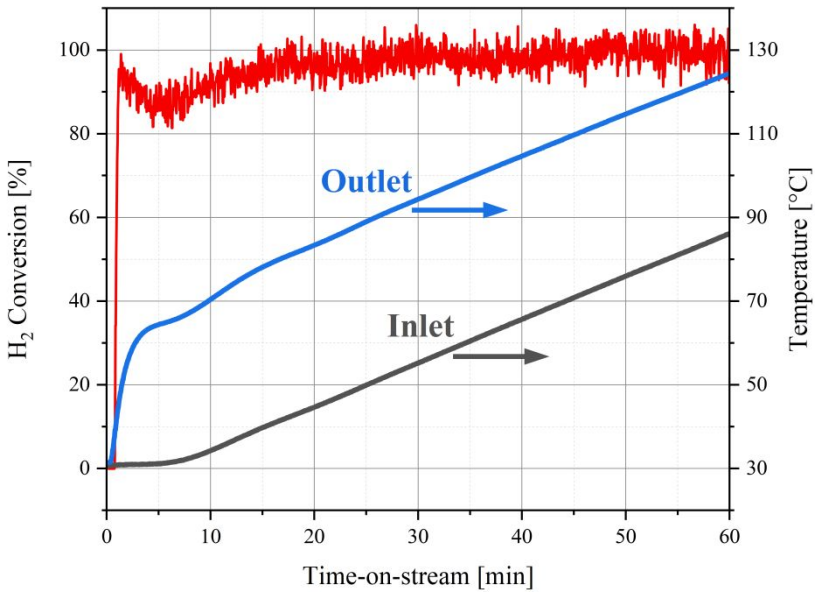

Figure S2. H_2 conversion (red) of a light-off of the 1%Pd/5%V_2O_5/20%TiO_2-Al_2O_3 monolith catalyst with a NO-free gas mixture (1% H_2, 10% O_2 in N_2). Reactor temperatures are shown for the thermocouples located upstream of the catalyst at the gas inlet (black) and downstream at the outlet (blue).

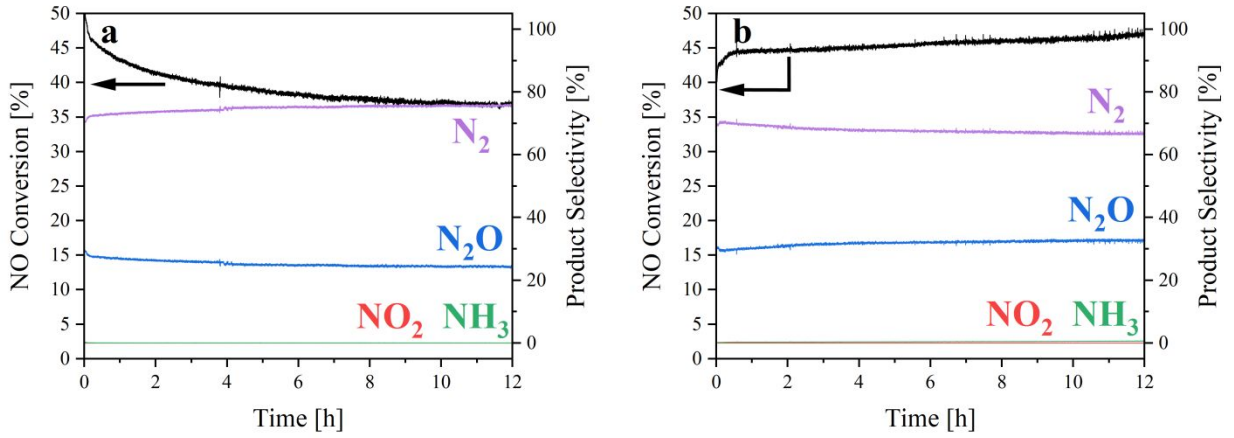

Figure S3. NO conversion and product selectivities during a long-term measurement over 12 h of the 1%Pd/5%V_2O_5/20%TiO_2-Al_2O_3 monolith catalyst at 220 °C inlet temperature with the gas mixtures A (a, 1000 ppm NO, 5000 ppm H_2 and 10% O_2 in N_2) and E (b, 1000 ppm NO, 5000 ppm H_2, 10% O_2 and 5% H_2O in N_2), GHSV = 60 000 h^{-1}.

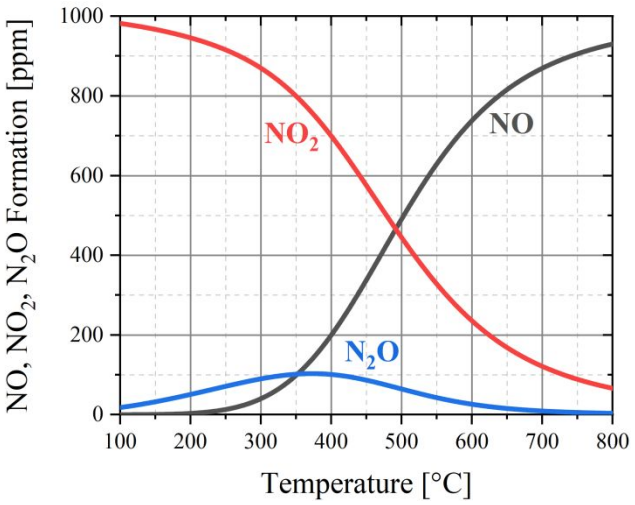

Figure S4. Thermodynamic equilibrium of the product distribution in a feed exhaust gas of 1000 ppm NO, 10% O_2 in N_2 calculated with the DETCHEM™ software package.