UV-activated NO_2 gas sensing by nanocrystalline ZnO: mechanistic insights from mass spectrometry investigations

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Supplementary Information

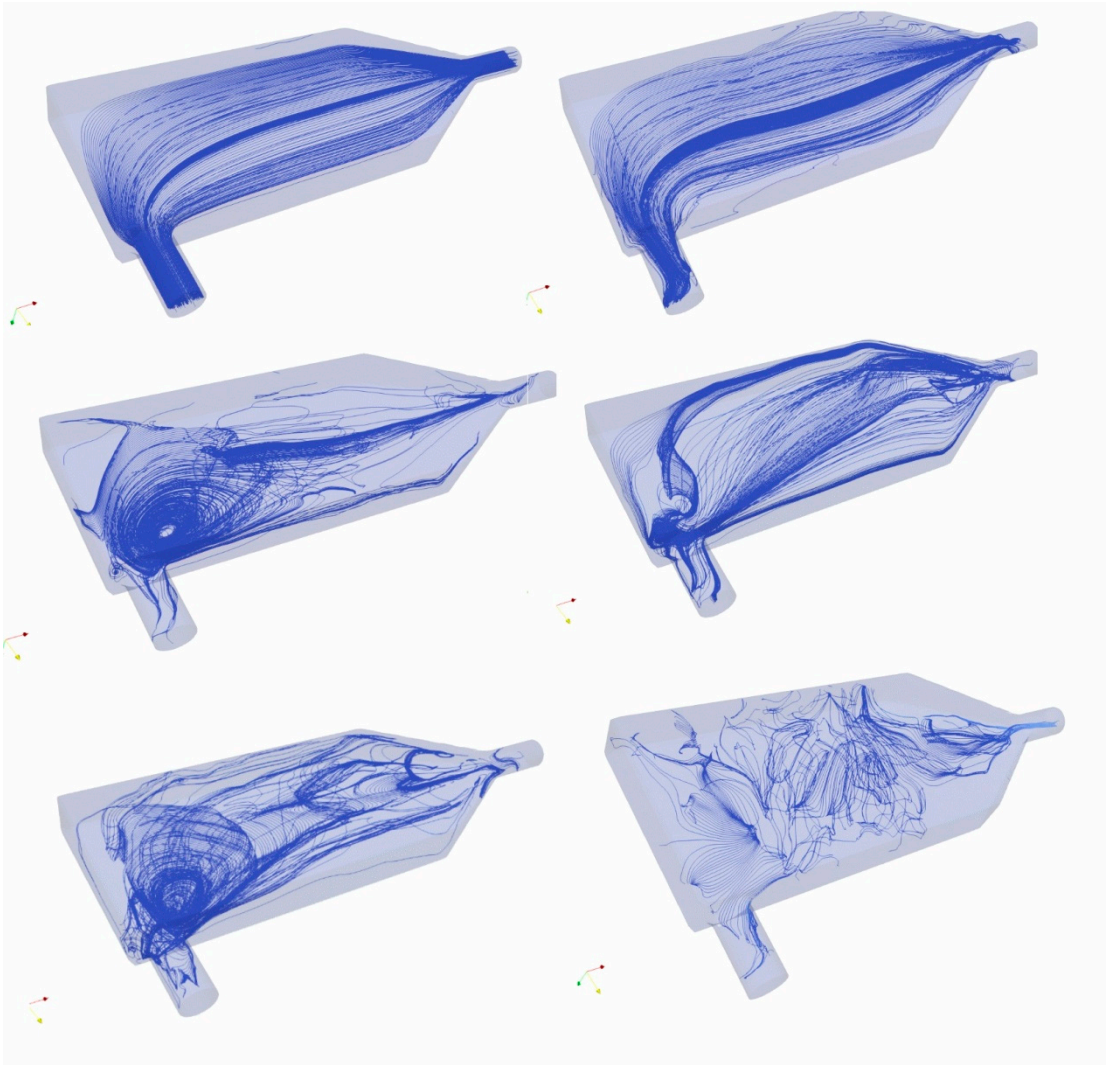

Figure S1. Simulated test chamber airflow evolution during flow rate increase from 0 to 15 mL/min computed with OpenFOAM (boundary conditions: mass flow inlet, constant

pressure outlet, no slip walls). Chosen inlet position causes vortex formation near the inlet and ensures transition to turbulent flow regime when flow rate is increased to nominal. Turbulent flow regime is essential to achieving CSTR-type (continuous stirred-tank reactor) step response of the test chamber. CSTR-type behavior eliminates potential concentration gradients, decreases dead volume of the chamber and greatly reduces sample bypass.

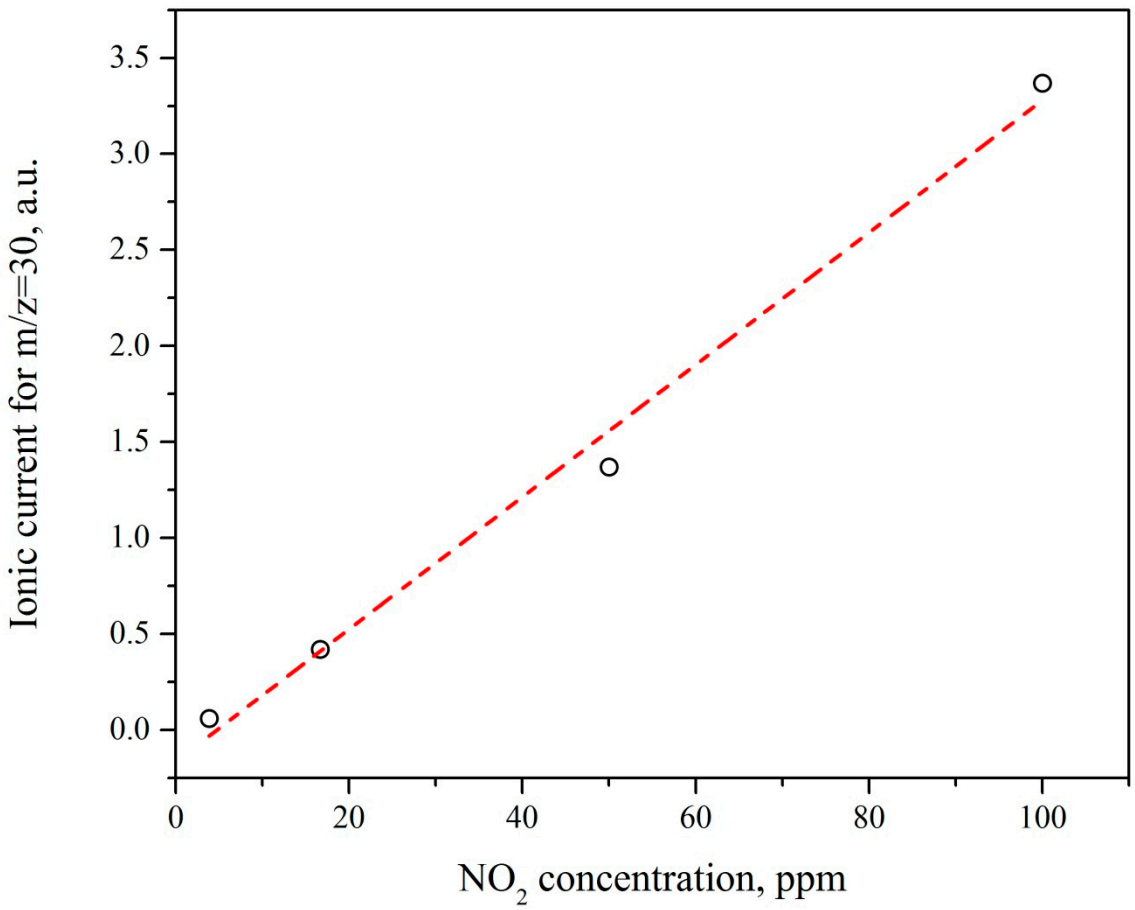

Figure S2. Calibration curve showing the relationship between the concentration of NO_2 in the carrier gas and the ion current by m/z=30.

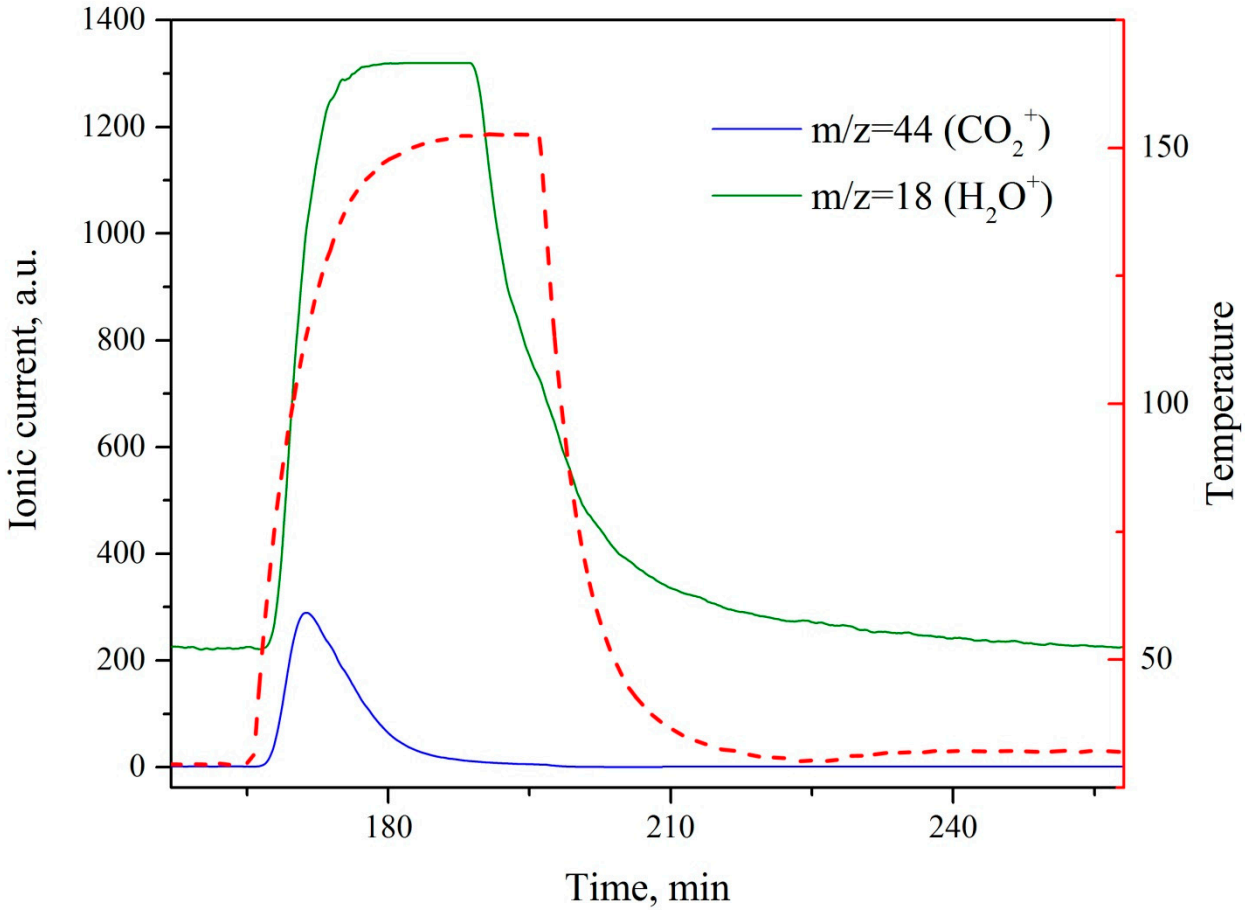

Figure S3. Thermal desorption of H_2O (m/z=18 a.m.u.) and CO_2 (m/z=44) from ZnO-300 sample in He flow at heating up to 150 ºC.