Electronic Supplementary Material (ESI) for Chemical Communications

Supplementary information

Design of A New *In-House* Ambient Pressure XPS and Surface Chemistry of Ceria under Reaction Conditions

Franklin (Feng) Tao*
Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN 46556

1. CAD drawing and photo of the *in-house* ambient pressure system (AP-XPS)

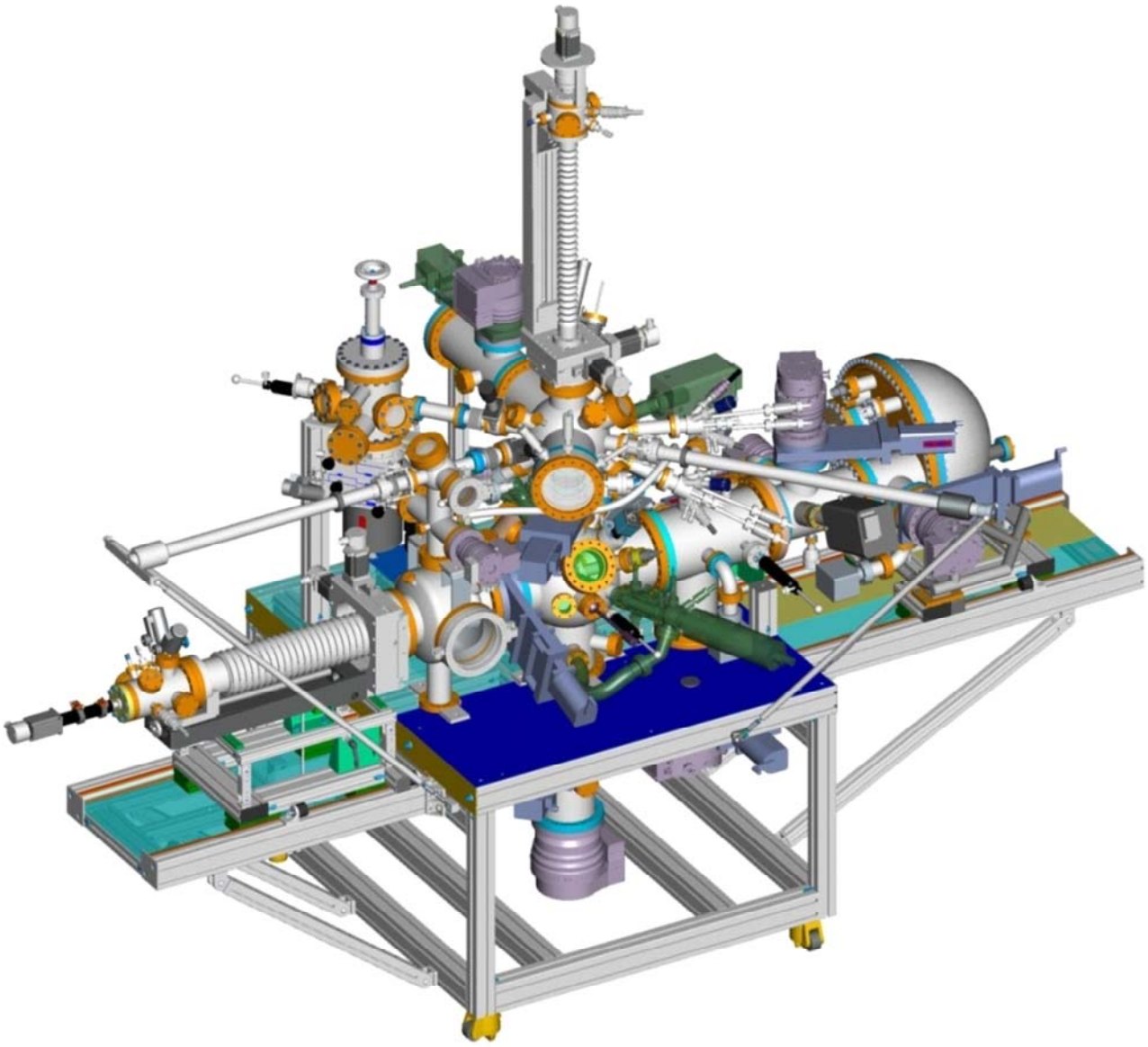

Fig. S1 *CAD drawing of the in-house ambient pressure system reported here.*

2. Reaction cell of the *in-house* ambient pressure system (AP-XPS)

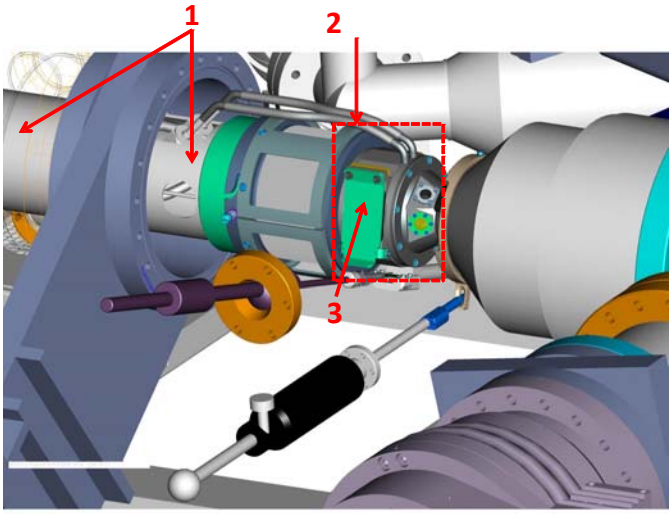

Fig. S2 *Representation of Fig. 3a with details. 1: Manipulator of the reaction cell for operando studies; 2: The reaction cell; 3: Door to lock the reaction cell or change samples.*

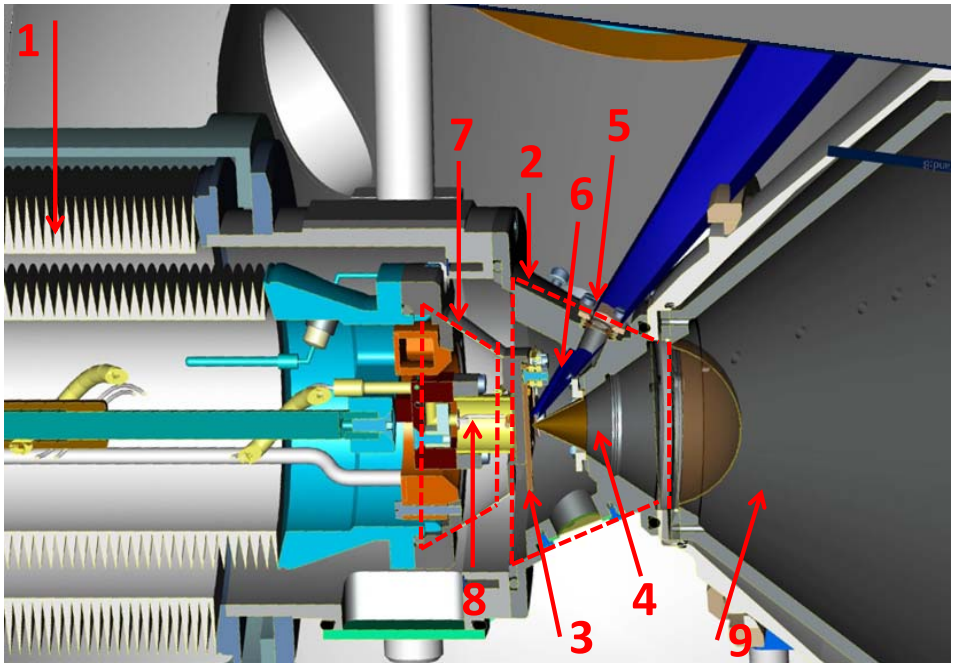

Fig. S3 *Representation of Fig. 3b with details. 1: Manipulator of the reaction cell for operando studies; 2: The reaction cell; 3: The sample stage in gaseous environment of reactants; 4: Nozzle; 5: Si_3N_4 window for X-ray transmission; 6:X-ray reaches sample surface; 7: UHV cavity to keep e-beam heater; 8: Filament of electron beam heater in UHV; 9: First differential pumping stage.*