Supporting information

Probing dynamic covalent chemistry in a 2D boroxine framework by *in-situ* near-ambient pressure X-ray photoelectron spectroscopy

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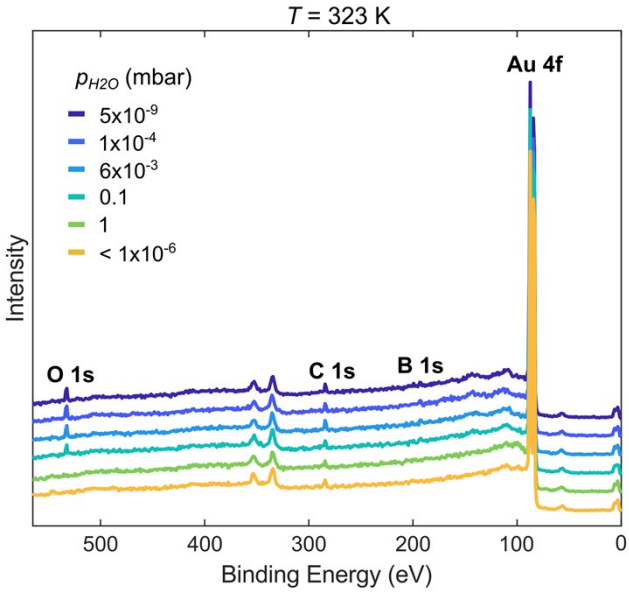

Fig. SI1. Survey spectra acquired at T = 323 K upon sequential increase of p_{H2O} and after cell evacuation. Photon energy: 650 eV.

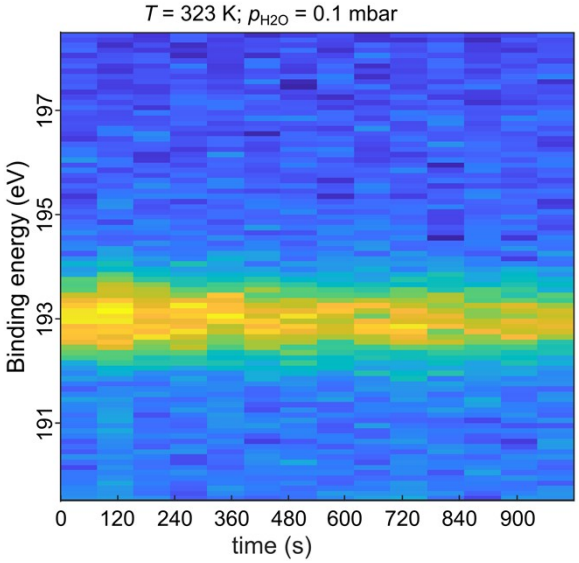

Fig. SI2. Time-resolved B 1s spectra acquired at T = 323K and p_{H2O} = 0.1 mbar. Photon energy: 650 eV.

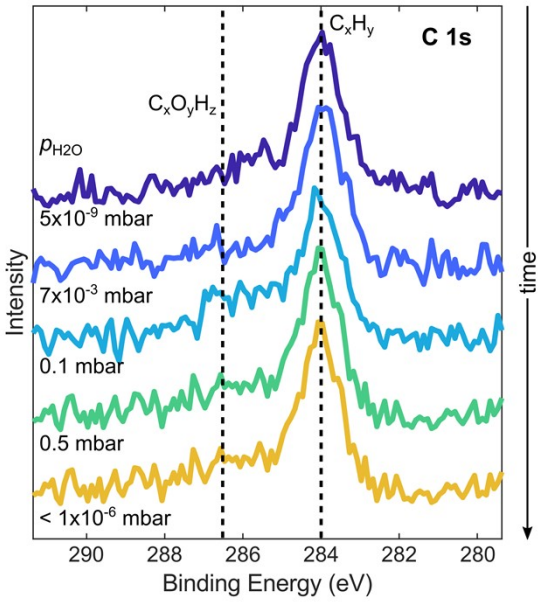

Fig. SI3. Carbon-containing contaminations at NAP. C 1s spectra acquired at T = 300 K upon sequential increase of p_{H2O} and after cell evacuation. Photon energy: 650 eV. The intensity of hydrocarbon species (C_xH_y, 284.0 eV) is rather constant. Oxygen-containing carbon species ($C_xO_yH_z$) are detected at 0.1 mbar at 286.5 eV, while their intensity diminish at 0.5 mbar.

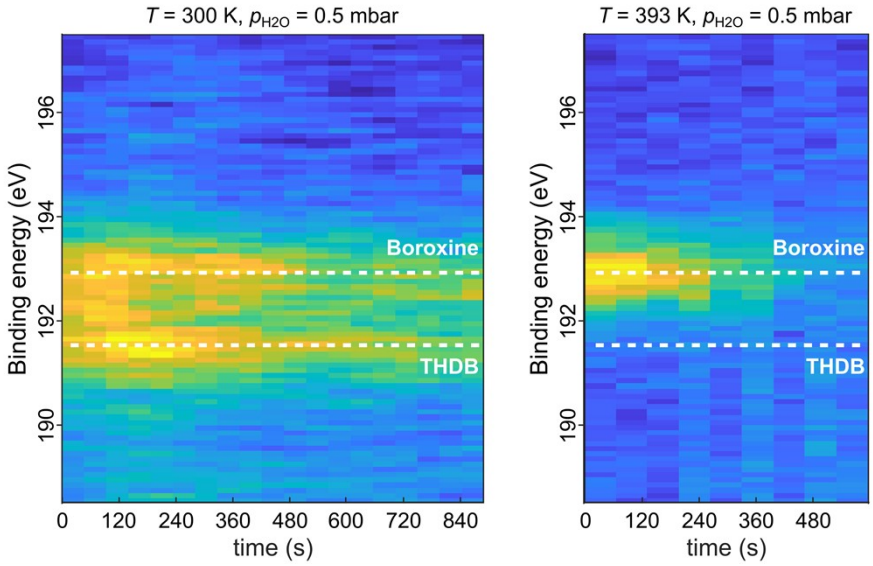

Fig. SI4. *In-situ* NAP-XPS characterization at p_{H2O} = 0.5 mbar. Time-resolved B 1s spectra acquired at T = 300 K (left) and T = 393 K (right). Photon energy: 650 eV. The binding energies corresponding to boroxine and THDB are indicated.

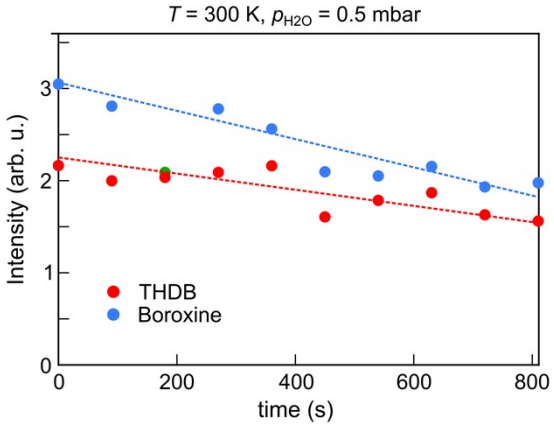

Fig. SI5. *In-situ* NAP-XPS characterization at p_{H2O} = 0.5 mbar. Plot of the time-resolved B 1s spectra components: THDB (red) and boroxine (blue), with dashed lines as a guide to the eye.