

Supporting Information

Improving the Performance of Supported Ionic Liquid Phase (SILP) catalysts for the Ultra-Low-Temperature Water-Gas Shift Reaction Using Metal Salt Additives

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Chemisorption

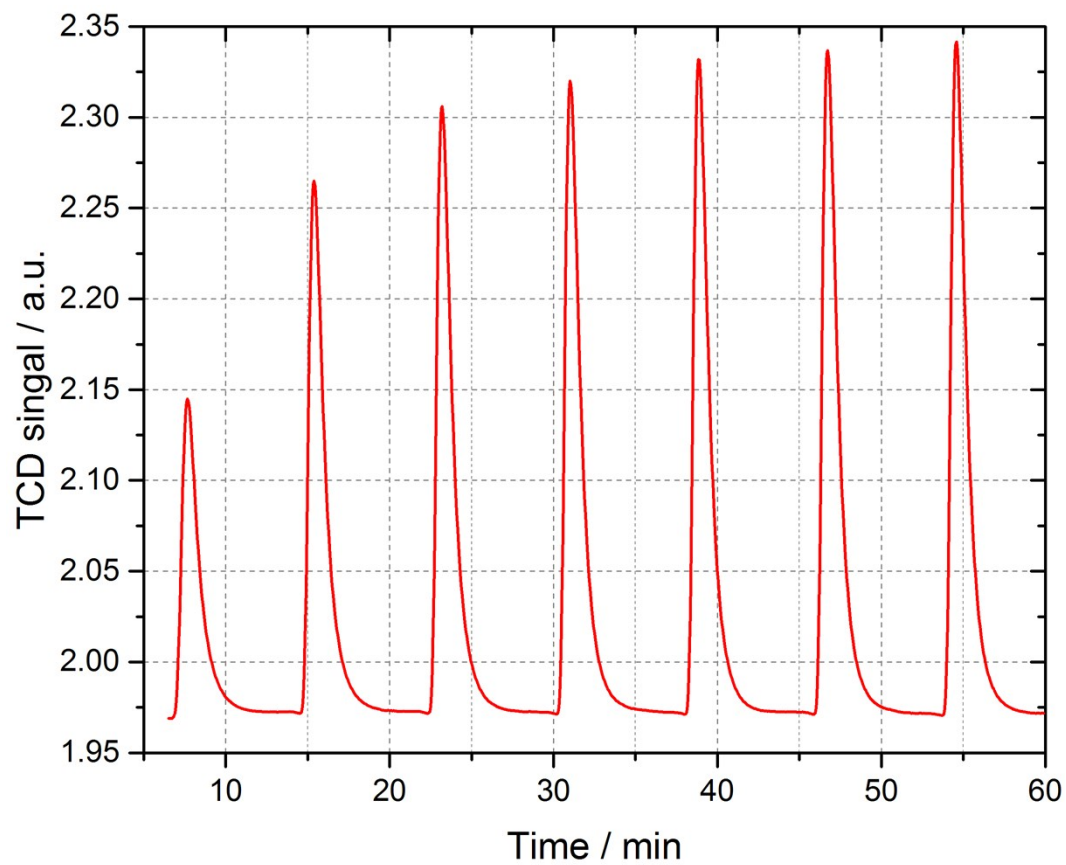


Figure S1. Exemplary pulse chemisorption experiment with a benchmark SILP catalyst system (no dopants added), TCD signal of eluting CO plotted over time, $T=130\text{ }^{\circ}\text{C}$, $\dot{V}_{He} = 20\text{ ml}_N\text{ min}^{-1}$, $V_{CO\text{ pulses}} = 0.5\text{ ml}_N$, $m_{\text{sample}} = 0.312\text{ g}$.

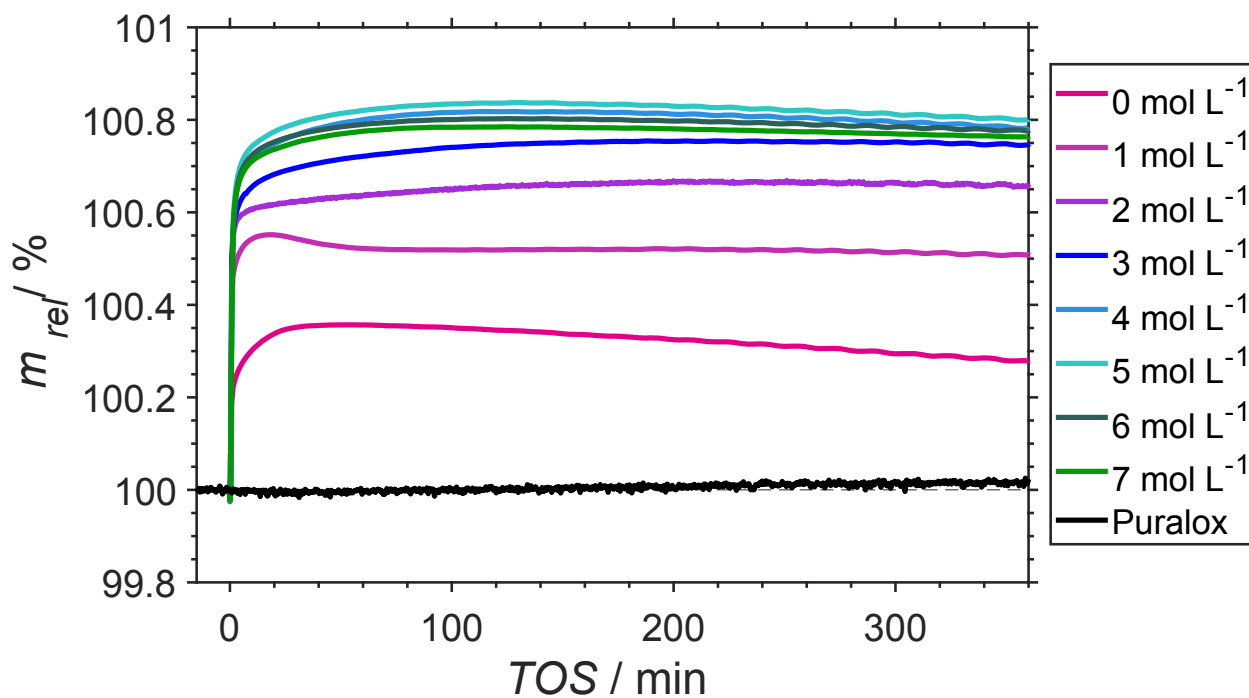


Figure S2. Weight change relative to the mass of dry SILP catalysts with various molarities of additive CuCl as observed during CO chemisorption experiments at 130 °C and 1 bar in a XEMIS sorption analyzer. Ru-dimer added to ionic liquid.

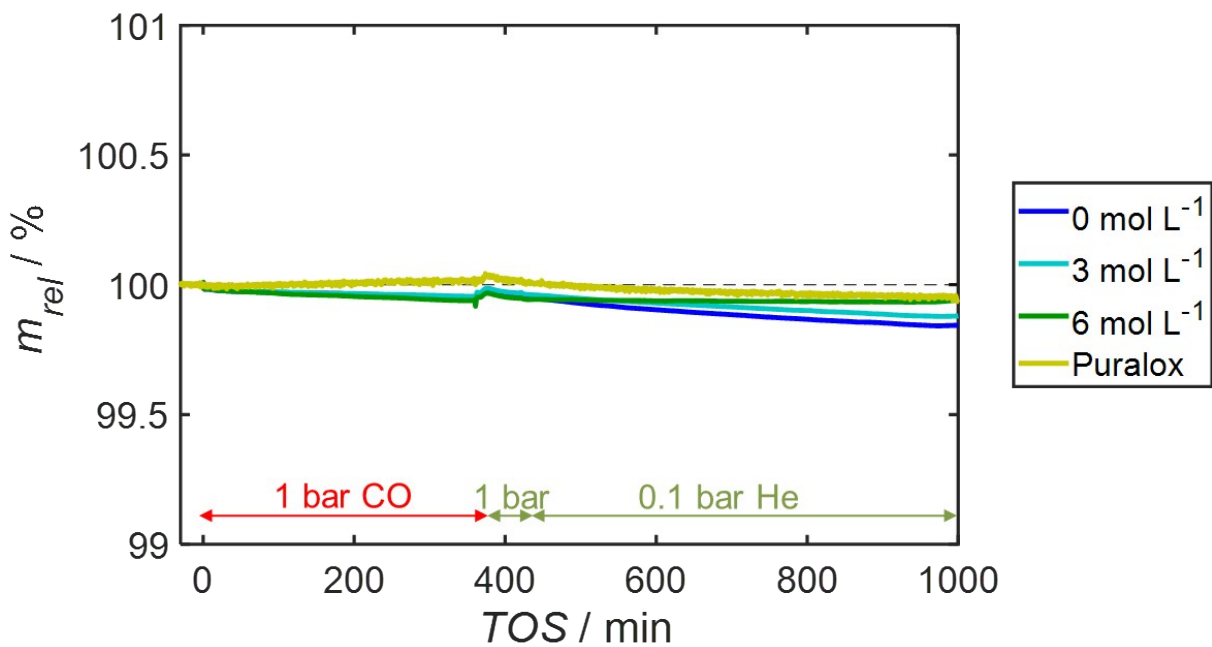


Figure S3. Weight change relative to the mass of dry SILP with various molarities of additive CuCl as observed during CO chemisorption experiments at 130 °C and 1 bar in a XEMIS sorption analyzer. No Ru-dimer added to ionic liquid.

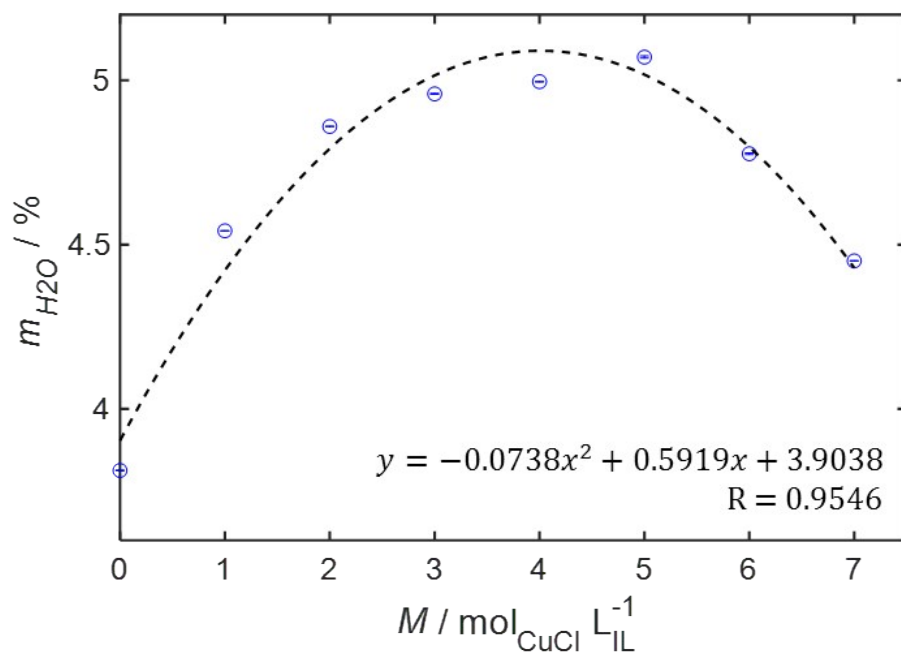


Figure S4. Fraction of adsorbed water relative to the mass of the dry SILP catalysts as a function of the molarity of the additive CuCl in the ionic liquid as obtained by means of high-resolution thermogravimetry in a XEMIS sorption analyzer (circles) with a second order polynomial fit (dashed).

Continuous gas-phase reactor setup

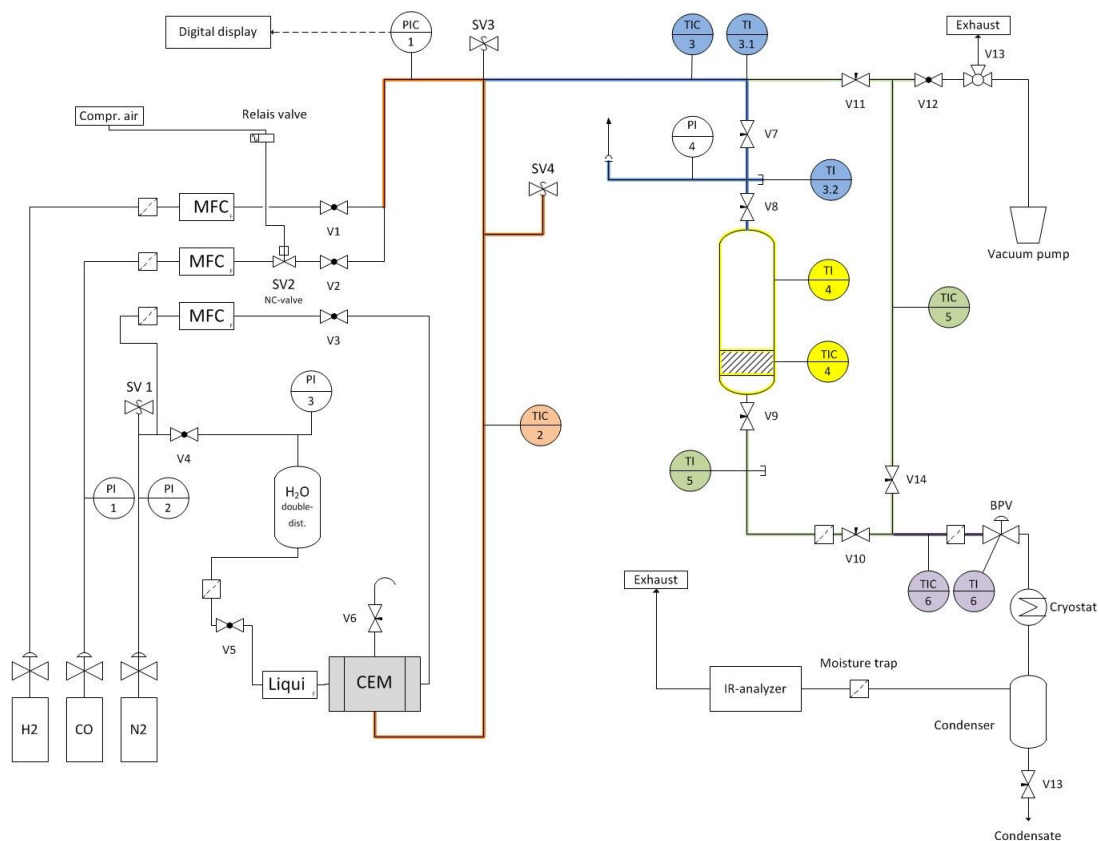


Figure S5. Flow scheme of the continuous fixed-bed reactor for the catalytic evaluation of the different samples. Red: gas dosing and mixing section, blue: upstream section, yellow: fixed-bed reactor, green: downstream/bypass section, purple: pressure regulation.

DRIFTS setup

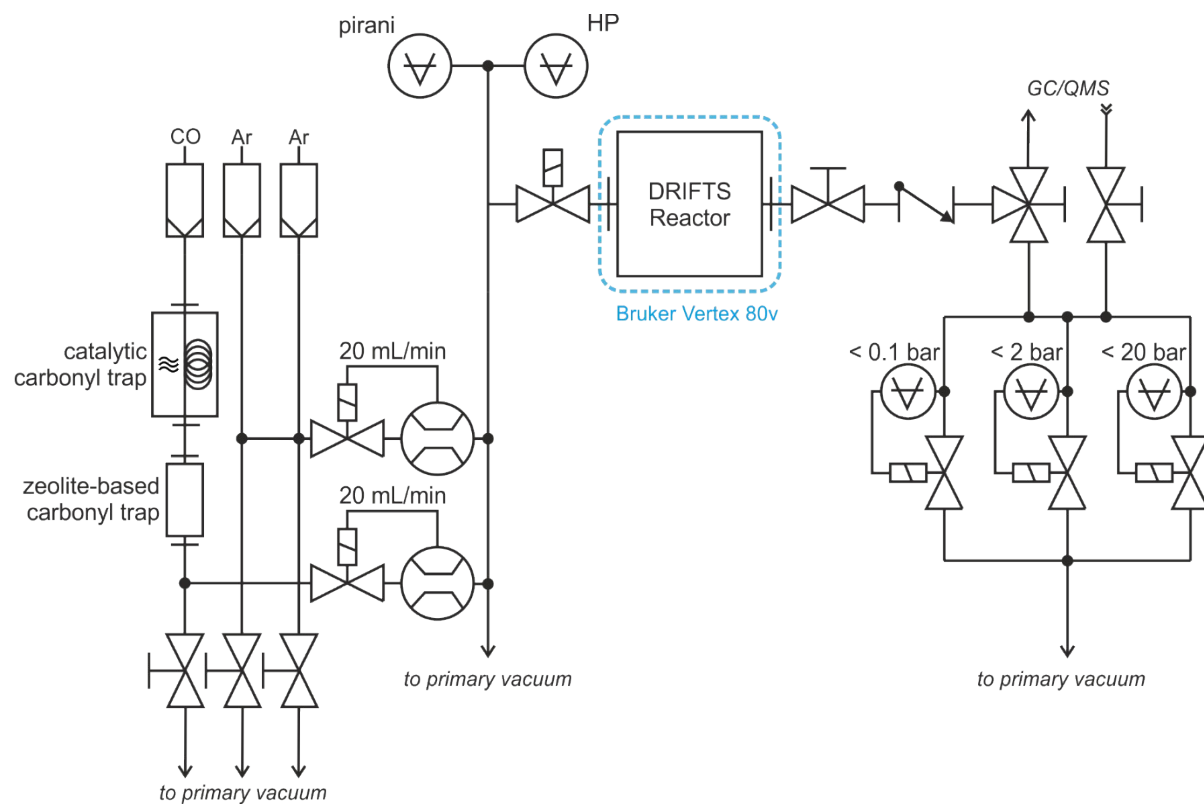


Figure S6. Selected parts of the DRIFTS setup.