

**Catalytic conversion of CO<sub>2</sub> to formate mediated by an aliphatic Pd-PCP pincer complex**L. Federer<sup>1</sup>, C. Adlhart<sup>1\*</sup>, C. Frech<sup>1</sup><sup>1</sup>ZHAW

We report the palladium-catalyzed transformation of CO<sub>2</sub> and H<sub>2</sub> to formate at low pressure (2 bar) and ambient temperature in presence of a base. Palladium-hydride complex **1** was synthesized from its chloride precursor with NaH in THF. The <sup>1</sup>H-NMR spectrum shows a triplet at δ -3.40 ppm with a <sup>2</sup>J<sub>P-H</sub> coupling constant of 20.7 Hz. The formate complex **2** was obtained by exposing **1** to CO<sub>2</sub> as indicated by a triplet signal in the <sup>1</sup>H-NMR spectrum at δ 9.18 ppm with a <sup>4</sup>J<sub>P-H</sub> coupling constant of 1.7 Hz and a singlet signal at δ 166.6 ppm in the broadband decoupled <sup>13</sup>C-NMR spectrum. After degassing of complex **2**, addition of a base and application of a H<sub>2</sub>-atmosphere regenerated the hydride complex **1**, thus completing the proposed catalytic cycle. The formation of formic acid was confirmed by NMR and headspace GC-MS measurements after treatment with HCl.

