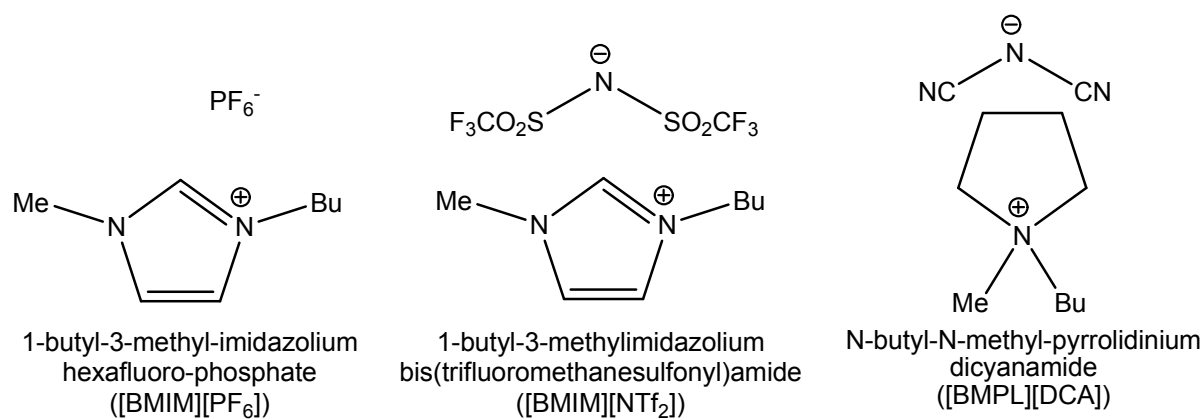


**Supplementary Information for**

**Highly cis-Selective and Lead-Free Hydrogenation of 2-Hexyne by a  
Supported Pd Catalyst with an Ionic-Liquid Layer**

Frederick Schwab, Natascha Weidler, Martin Lucas and Peter Claus\*

\*Technische Universität Darmstadt, Ernst-Berl-Institut, Technische Chemie II,  
Alarich-Weiss-Straße 8, 64287 Darmstadt, Germany. Fax: +49 6151 16 4788;  
Tel: +49 6151 16 5369; E-Mail: [claus@ct.chemie.tu-darmstadt.de](mailto:claus@ct.chemie.tu-darmstadt.de)



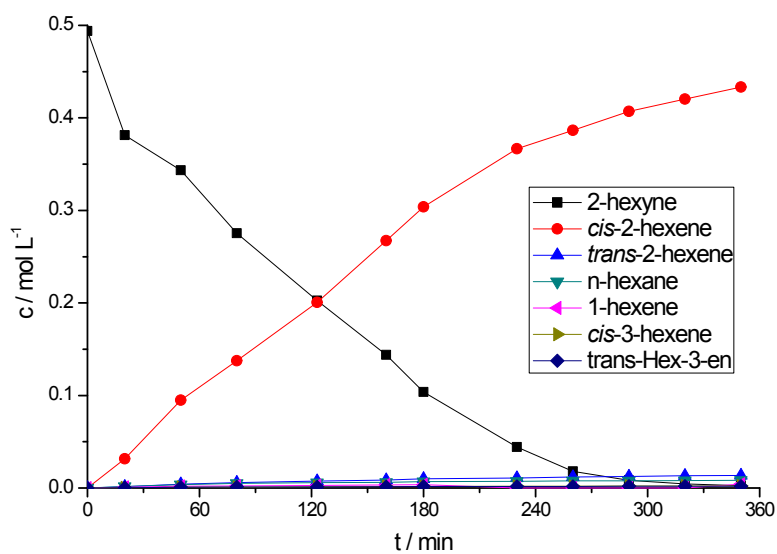
**Scheme S1** Structures of the ionic liquids used in this work.

**Calculation of the modified Space-Time-Yield (STY) according equation (1):**

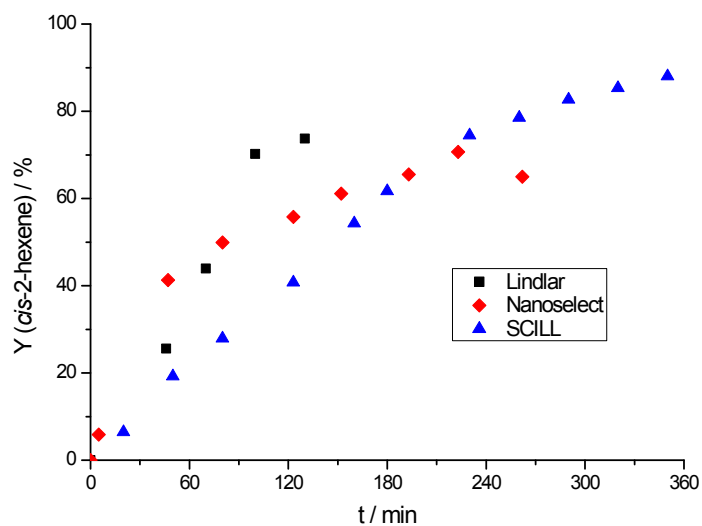
$$STY = \frac{m(\text{cis-2-hexene})_{Y_{max}}}{m(\text{palladium}) \cdot t_{Y_{max}}} [g_{prod.} g_{Pd}^{-1} \text{min}^{-1}]$$

**Table S1** Space-Time-Yields

Catalyst	n (2-hexyne) / mmol	Y (cis-2-hexene) / %	m (cis-2-hexene) / g	m (Pd) / mg	t / min	STY / g <sub>prod</sub> g <sub>Pd</sub> <sup>-1</sup> min <sup>-1</sup>
30[BMPL][DCA]-1Pd/SiO <sub>2</sub> <i>This work</i>	44.5	88	3.3	2.5	350	3.8
Pd-NP in methanol <i>Ref. [5]</i>	6.7	82	0.5	20.0	240	0.1
Lindlar Catalyst <i>This work</i>	44.5	74	2.8	2.5	130	8.6
NanoSelect LF 200 <i>This work</i>	44.5	71	2.7	3.5	223	3.5



**Fig. S1:** Concentration profile of the hydrogenation of 2-hexyne catalyzed by 30[BMPL][DCA]-1Pd/SiO<sub>2</sub>. (conditions: T = 25 °C, p (H<sub>2</sub>) = 1.04 bar, m = 350 mg, 5 mL 2-hexyne, 5 mL *n*-octane, 80 mL *n*-heptane).



**Fig. S2** Y-t-diagram of the SCILL and industrial reference catalysts (conditions: T = 25 °C, p (H<sub>2</sub>) = 1.04 bar, 5 mL 2-hexyne, 5 mL *n*-octane, 80 mL *n*-heptane).