

## **Sorption properties toward environmentally important VOCs of half-sandwich Ru(II) complexes containing perylene bisimide ligands**

### **Abstract**

Two py-functionalized perylene bisimide ligands were synthesized and used to make bimetallic half-sandwich Ru(II) complexes. These were characterized by IR,  $^1\text{H}$  NMR,  $^{13}\text{C}$  CPMAS SSNMR spectroscopy, and elemental analysis. The complexes are wheel-and-axle (waa) compounds, where the axle is the divergent ligand and the wheels are the [(p-cymene)RuCl<sub>2</sub>] units. The complexes, but not the free ligands, showed absorption of volatile organic compounds such as toluene and xylenes through heterogeneous solid/gas uptakes. The reactivity is ascribable to the waa geometry, likely by an upset of the high stacking characterizing the crystalline frameworks of the free ligands. The kinetic profiles of the uptake reactions were determined.