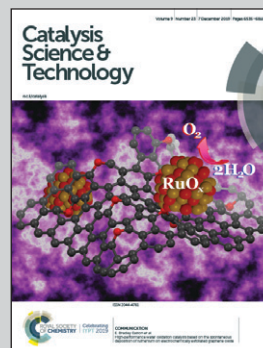


**Showcasing research from Pacific Northwest
National Laboratory.**

Catalytic activation of ethylene C–H bonds on uniform d^8 Ir(I) and Ni(II) cations in zeolites: toward molecular level understanding of ethylene polymerization on heterogeneous catalysts

Ethylene polymerization is a large-scale catalytic process employed in the manufacture of an abundance of consumer products. In this work, uniform d^8 metal centers are synthesized and exploited to reveal the long-debated intermediates of ethylene polymerization whereby the oxidative addition of ethylene generates d^6 metal vinyl hydride complexes. The dehydrogenative coupling of ethylene leads to the formation of butenes and butadiene under mild conditions on the zeolite-supported Ir(I) and Ni(II) catalysts. The findings provide new molecular-level understanding to an important chemical process.

As featured in:



See Nicholas R. Jaegers,
Konstantin Khivantsev,
János Szanyi *et al.*,
Catal. Sci. Technol., 2019, 9, 6570.