Preparation of NHC-based Pd catalyst:

\[
\text{Cu(NO}_3\text{)}_{2}\cdot 3\text{H}_2\text{O} 
\rightarrow \text{[Cu}_2\text{L}_(\text{MeOH})_2\text{]}_4\text{NO}_3\cdot \text{H}_2\text{O}; \quad 1 
\rightarrow \text{Pd(OAc)}_2
\]

\[2 \text{Cl}^- \text{MeOH-EtOH, 65 °C, 24 h} \]

\[
\text{Cu}_{2}\text{L}_{0.24}\text{Cu}_{0.76}\text{Pd}_{0.76}(\text{H}_2\text{O})_4\text{NO}_3\cdot \text{H}_2\text{O}; \quad 2
\]

Suzuki–Miyaura reaction:

\[
\text{R}_1\text{X} + \text{R}_2\text{B(OH)}_2 \quad (1 \text{ equiv}) 
\rightarrow \text{R}_1\text{R}_2\text{X} \quad (1.5 \text{ equiv}) 
\]

\[
\text{PhMe, 70 °C, 12 h} 
\rightarrow \text{[Cu}_2\text{L}_(\text{MeOH})_2\text{]}_4\text{NO}_3\cdot \text{H}_2\text{O}; \quad 1 
\rightarrow \text{Pd(OAc)}_2
\]

Significance: A metal–organic framework (MOF) catalyst 2 was prepared from dicarboxylic acid H\textsubscript{2}L\textsubscript{2}Cl\textsubscript{2} bearing two azolium components through the MOF formation with Cu(NO\textsubscript{3})\textsubscript{2}·3H\textsubscript{2}O followed by the modification with Pd(OAc)\textsubscript{2}. The Suzuki–Miyaura reaction of aryl halides and arylboronic acids was carried out with 2 (10 mol%) in toluene to give the corresponding biaryl products in 81–99% yield.

Comment: MOF catalyst 2 was recovered by filtration and reused five times without loss of catalytic activity. A catalyst prepared from H\textsubscript{2}L\textsubscript{2}Cl\textsubscript{2}, CuCl\textsubscript{2}, and Pd(OAc)\textsubscript{2}, which has a different MOF structure, exhibited much lower catalytic activity (4-methoxybiphenyl: 43%) than 2, highlighting the important roles of the framework structures in determining the catalytic performance.