

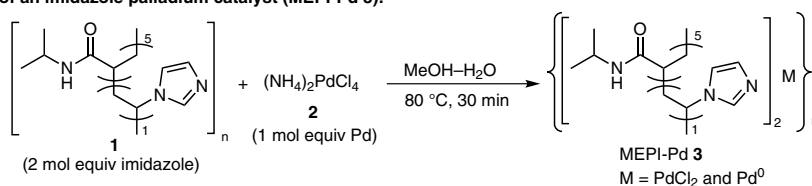
Y. M. A. YAMADA,* S. M. SARKAR, Y. UOZUMI* (RIKEN ADVANCED SCIENCE INSTITUTE, WAKO, INSTITUTE FOR MOLECULAR SCIENCE AND THE GRADUATE SCHOOL FOR ADVANCED STUDIES, OKAZAKI, JAPAN)

Self-Assembled Poly(imidazole-palladium): Highly Active, Reusable Catalyst at Parts per Million to Parts per Billion Levels

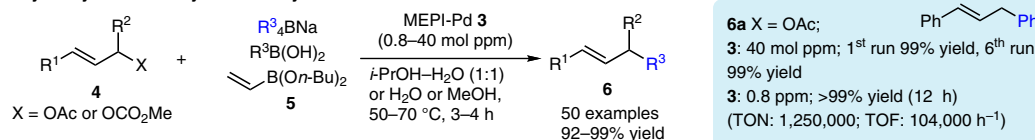
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Polymeric Imidazole Pd Catalyst for Cross-Couplings

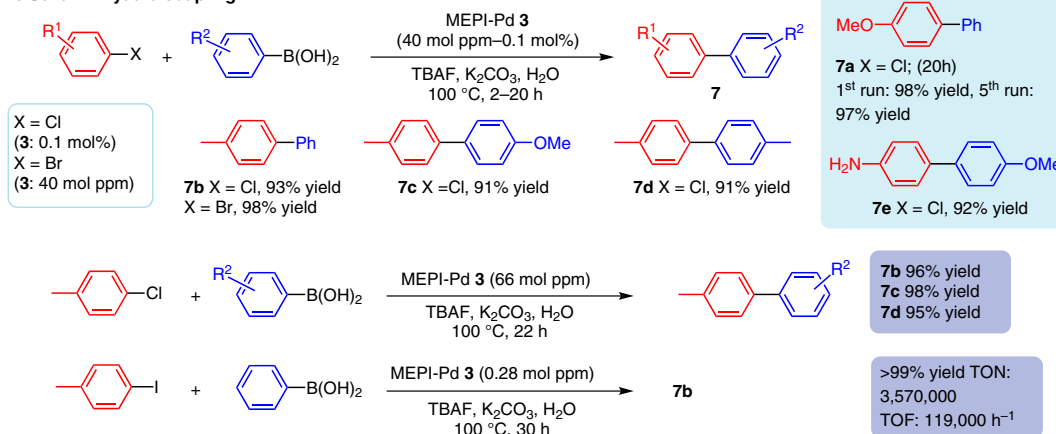
Preparation of an imidazole palladium catalyst (MEPI-Pd **3**):



Allylic arylation–alkenylation of allylic acetates/carbonates:



The Suzuki–Miyaura coupling:



Significance: A self-assembled polymeric palladium catalyst MEPI-Pd **3** was prepared via the molecular convolution of (NH₄)₂PdCl₄ and poly[(*N*-vinylimidazole)-*co*-(*N*-isopropylacrylamide)]₅. MEPI-Pd **3** (0.8–40 mol ppm Pd) promoted the allylic arylation/alkenylation of allylic esters **4** with aryl/alkenylboron reagents **5** in water and/or alcohol to give the corresponding products **6**. MEPI-Pd **3** (0.28 mol ppm–0.1 mol% Pd) drove the Suzuki–Miyaura coupling of a variety of aryl chlorides, bromides, and iodides in water to give the corresponding biaryls **7**.

SYNFACTS Contributors: Yasuhiro Uozumi, Yoichi M. A. Yamada, Shaheen M. Sarkar

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Comment: MEPI-Pd **3** was reused without loss of catalytic activity for the allylic arylation and the Suzuki–Miyaura coupling. MEPI-Pd with 0.28 mol ppm Pd efficiently promoted the Suzuki–Miyaura coupling of iodotoluene and phenylboronic acid to afford **7b** quantitatively with a TON of 3,570,000 and a TOF of 119,000 h⁻¹. The authors reported a preliminary communication for the allylic arylation of allylic acetates (*Angew. Chem. Int. Ed.* **2011**, *50*, 9437; *Synfacts* **2011**, 1380).