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Palladium Supported on Zinc Ferrite: An Efficient Catalyst for Ligand-Free C–C and C–O Cross-Coupling Reactions
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Ligand-Free C–C and C–O Cross-Couplings with Pd–ZnFe₂O₄

Significance: The superparamagnetic Pd–ZnFe₂O₄ catalyst was prepared by adding palladium nanoparticles into a suspension of ZnFe₂O₄ magnetic nanoparticles in water. Pd–ZnFe₂O₄ catalyzed the Sonogashira coupling (8 examples, eq. 1), the Heck–Matsuda coupling (10 examples, eq. 2), the cyanation of aryl halides (8 examples, eq. 3) and the Ullman coupling (11 examples, eq. 4).

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Comment: In the Sonogashira coupling of iodo-benzene with phenylacetylene and the Ullmann coupling of 4-nitrochlorobenzene with phenol, the catalyst was recovered and reused twice without significant loss of catalytic activity.