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Cobaltocene Reduction of Cu and Ag Salts and Catalytic Behavior of the Nanoparticles Formed
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Alkyne–Azide Cycloaddition on Water-Soluble Copper NP–Cobaltocene Catalyst

Category

Polymer-Supported Synthesis

Key words

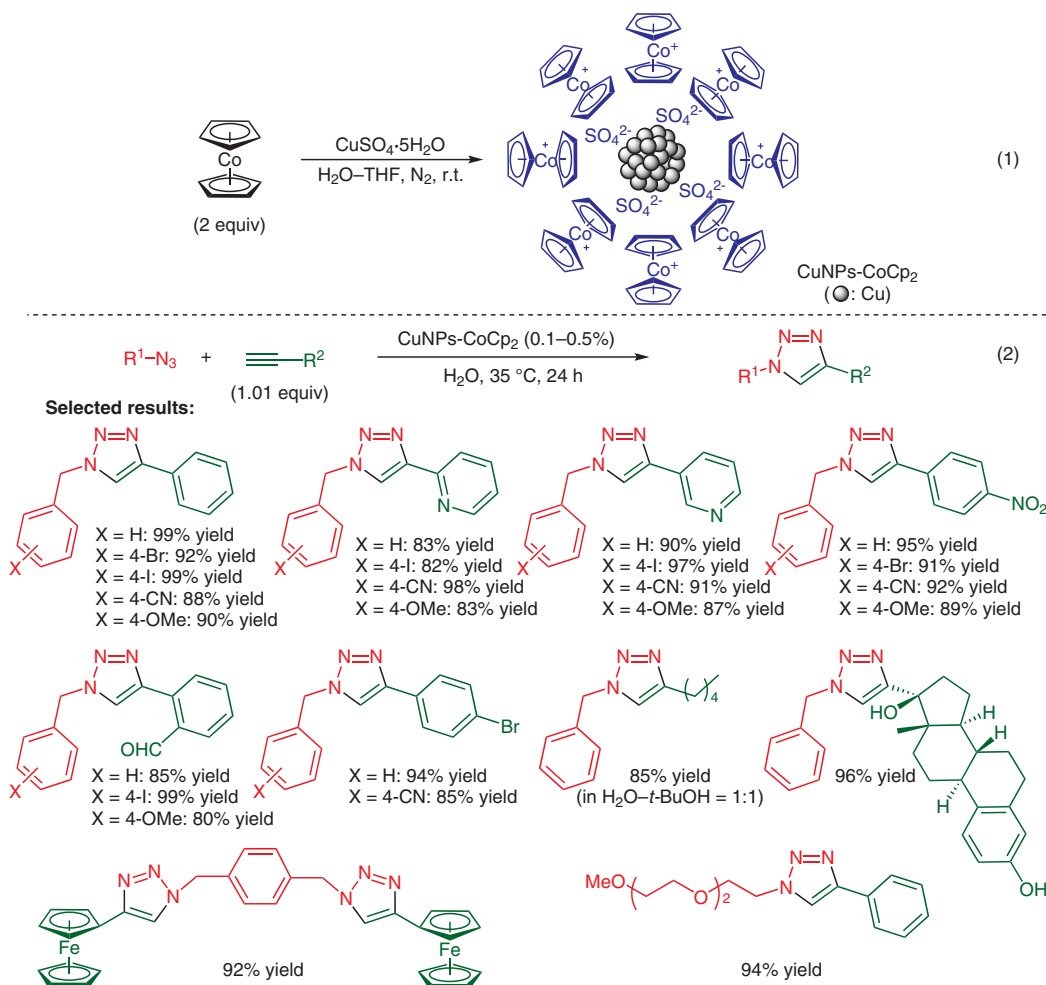
copper catalysis

nanoparticles

cobaltocene

click reaction

Synfact
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Significance: Water-soluble copper nanoparticles stabilized by a cobaltocenium network (CuNPs–CoCp₂) were prepared through the reduction of CuSO₄·5H₂O by cobaltocene (eq. 1). CuNPs–CoCp₂ catalyzed the alkyne–azide cycloaddition of terminal alkynes with organic azides in H₂O at 35 °C to give the corresponding 1,2,3-triazoles in ≤99% yield (eq. 2; 30 examples).

Comment: The catalyst was characterized by means of UV-Vis, TEM, and XPS analyses. In the alkyne–azide cycloaddition of phenylacetylene with benzyl azide, the water-soluble catalyst was recovered by decantation and recycled four times with a slight loss of its activity (first run: 99%; fourth run: 86%).

SYNFACTS Contributors: Yasuhiro Uozumi, Aya Tazawa
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