Click Reaction Using Polymer-Supported Cul–Cryptand-22

**Significance:** A polystyrene resin supported Cul–cryptand-22 complex (PS–C22–CuI) was prepared by mixing chloromethylated polystyrene with cryptand-22 in diethyl ether, followed by the complexation with CuI in ethanol (eq. 1). PS–C22–CuI catalyzed the click reaction of azides with terminal alkynes (eq. 2, method A) or the one-pot three-component reaction from alkyl halides, sodium azide, and terminal alkynes (eq. 3, method B) to give the corresponding 1,2,3-triazoles in up to 99% yield.

**Comment:** The PS–C22–CuI complex was characterized by FT-IR, EDX, SEM, XPS, and TG-DTA analysis. In both methods A and B for synthesizing 1-benzyl-4-phenyl-1H-1,2,3-triazole, the catalyst was recovered by filtration and reused three times.

**Selected examples:**

- 99% yield (eq. 2)
- 99% yield (eq. 3, X = Br)
- 78% yield (eq. 2)
- 73% yield (eq. 3, X = Br)
- 93% yield (eq. 2)
- 85% yield (eq. 3, X = Br)
- 86% yield (eq. 2)
- 82% yield (eq. 3, X = Cl)

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