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COPPER(I) CATALYZED AZIDE-ALKYNE CYCLOADDITION IN IONIC LIQUIDS

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Since 2002 when Meldal [1] and Sharpless [2] independently discovered a copper effect on azide-alkyne cycloaddition (Huisgen reaction), the copper(I) catalyzed azide-alkyne cycloaddition (CuAAC) reaction has gained a popularity and attention from scientists in various fields. CuAAC can be carried out in a variety of molecular solvents ranging from the nonpolar toluene and dichloromethane, to the polar acetonitrile and N,N-dimethylformamide, and even in aqueous solutions.

We have extended the scope of the CuAAC reaction by using ionic liquids (ILs) as reaction media. In this work the impact of IL structure and composition on benzylazide-phenylacetylene CuAAC reaction kinetics was investigated. Kinetic data were acquired by ¹H NMR spectroscopy. The effects of coordinating and non-coordinating IL anions regarding CuAAC reaction kinetics were tested. The importance of water content in this system is demonstrated by remarkable changes in reaction kinetic curves.

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