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Research Article

Deep Eutectic Solvent-Mediated Oxidative Homocoupling of Terminal Alkynes to 1,3-Diynes under Mild Green Conditions

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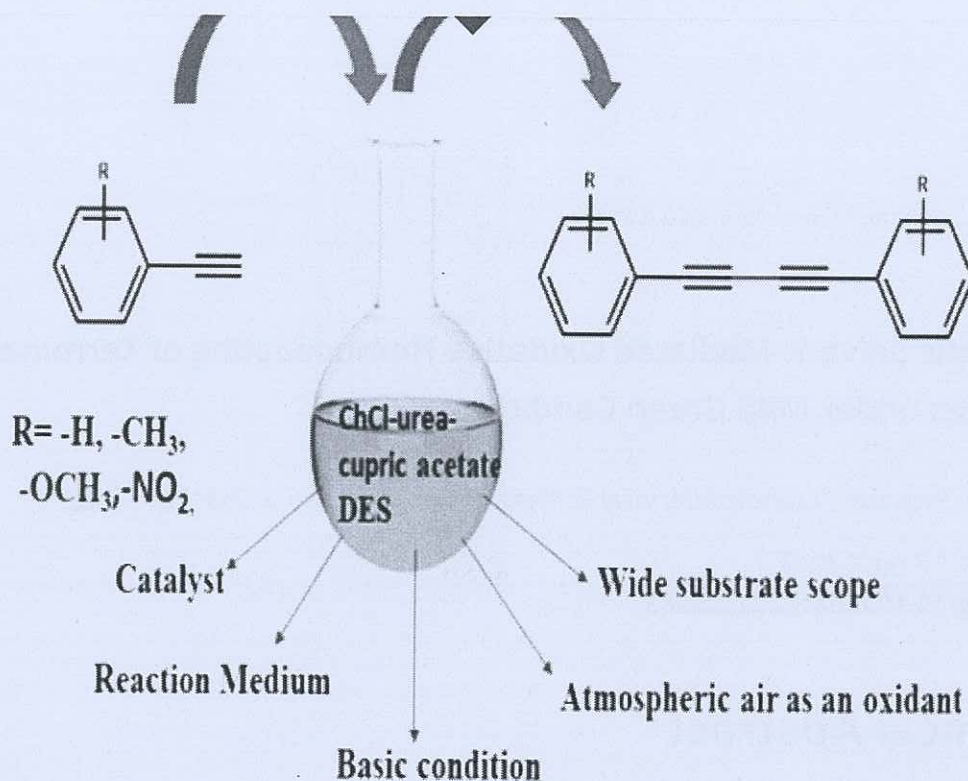
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Graphical Abstract

We prepared a commercially viable Deep Eutectic Solvent (DES) based on Choline Chloride-Urea-copper acetate for the first time. It mediates the homocoupling of terminal alkynes, using air as an oxidant. Water is the only by-product of the entire process. The method avoids ligands, bases, oxidants, and costly palladium catalysts, which qualifies the process greener than ever. The DES can be reused at least three times without affecting the reaction yield significantly.



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Abstract

We prepared a commercially viable Deep Eutectic Solvent (DES) based on Choline Chloride-Urea-copper acetate for the first time. It mediates the homocoupling of terminal alkynes, using air as an oxidant. Water is the only by-product of the entire process. The method avoids ligands, bases, oxidants, and costly palladium catalysts, which qualifies the process greener than ever. The DES can be reused at least three times without affecting the reaction yield significantly. The key features of the protocol that qualify the process as green include the ambient reaction temperatures, lesser use of conventional organic solvents in the reaction, higher yields, and easy product isolation qualify the protocol as a green process.

Conflict of interest

The authors declare no conflict of interest.

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Data Availability Statement



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