Title: Chitosan hydrochloride a bio-derived, homogeneous, reusable catalyst for room temperature one pot diazotization and coupling

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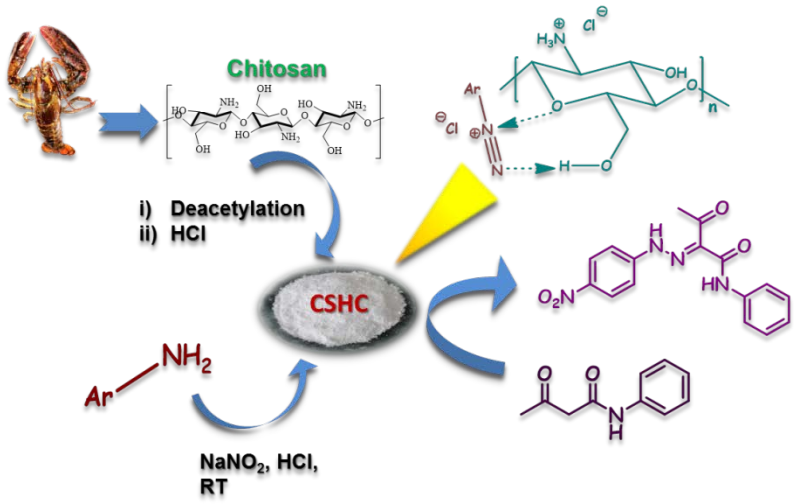
Abstract:
Chitosan hydrochloride (CSHC) in water was used as catalytic medium for room temperature diazotization and coupling reaction. This protocol employs bio-derived catalyst for successful diazotization of various primary anilines at ambient temperature conditions by providing the stable medium for the formation of diazonium salt. The acidic coupling is followed to yield various dyes and pigments in the same reaction flask. The extensive hydrogen bonding of chitosan is proposed to be the reason for the stability of formed diazonium salts. The medium is reused for five times without losing much of the product yield. Reaction proceeds smoothly with two equivalent of hydrochloric acid avoiding the excess use of acid. The optimal use of acid; simple operational and work up method; room temperature energy efficient process; use of bio-derived and highly biodegradable catalyst; and recyclability of the medium renders the protocol environmentally benign.

Figure/Scheme:



References and Notes:

Kamble, S. S.; Shankarling, G. S. Room Temperature Diazotization and Coupling Reaction Using a DES-Ethanol System: A Green Approach towards the Synthesis of Monoazo Pigments. Chem Commun 2019, 55 (42), 5970–5973. https://doi.org/10.1039/c9cc01114e.