

# MECHANOCHEMICAL SYNTHESIS OF PYRROLO[1,2-*a*]INDOLES UNDER NEAT CONDITIONS IN PRESENCE OF IONIC LIQUID

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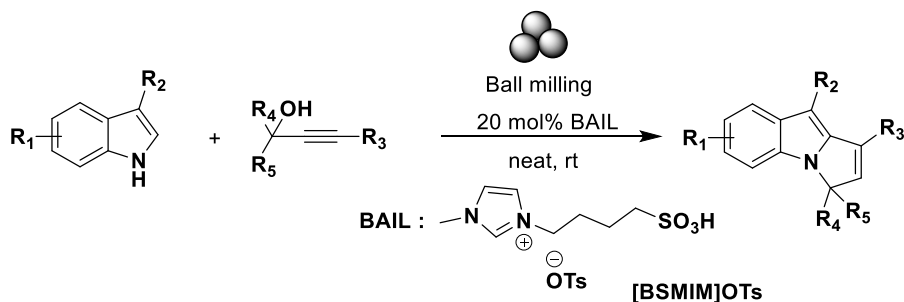
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Nowadays, chemical reactions under ball milling have received massive attention in academia and industry due to their specific advantages like shorter reaction time, usually solvent-free operation, better yield, ambient conditions, and often improved selectivity [1]. On the other hand, room-temperature ionic liquids have been analyzed as good greener selection to the volatile organic solvent due to their unique property like easy recyclability, negligible vapor pressure, high thermal stability, large liquid temperature range, strong dissolving power for a wide range of organic and inorganic compounds etc. We have developed that 1-butane sulfonic acid-3-methylimidazolium tosylate, [BSMIM]OTs, emerges as an outstanding catalyst in the coherent cascade methodology, facilitating the chemo selective synthesis of *N*-fused heterocycles of 3*H*-pyrrolo[1,2-*a*]indole derivatives under ball milling conditions. This catalytic process operates through a tandem cyclization reaction involving propargyl alcohols and 3-substituted 1*H*-indoles (Scheme 1). The catalyst enables the efficient formation of both C-C and N-C bonds under environmentally friendly conditions, conducted neat, without the need for additional bases or ligands.



Scheme 1. Synthesis of 3*H*-pyrrolo[1,2-*a*]indole derivatives under ball milling conditions:

1. Ranu B. et al. Ball milling towards green synthesis: Applications, projects and challenges, ed. B. Ranu and A. Stolle, Royal Society of Chemistry, UK, 2015.

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