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Synthesis and characterization of 4-methyl-1-(3-sulfopropyl)pyridinium hydrogen sulfate as a new ionic liquid immobilized on silica nanoparticles: A recyclable nanocomposite ionic liquid for the production of various substituted phthalazine-ones

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Abstract

4-Methyl-1-(3-sulfopropyl)pyridinium hydrogen sulfate ([MSPP][HSO₄]) as a new acidic ionic liquid was prepared in a quick and easy process, and characterized by some techniques such as ¹H NMR, ¹³C NMR and FT-IR analysis. Then, [MSPP][HSO₄] was immobilized on silica nanoparticles by impregnation method to afford heterogeneous acidic ionic liquid ([MSPP]HSO₄@nSiO₂) and characterized by elemental analysis (CHNS), FT-IR, and SEM. The worthiness of [MSPP]HSO₄@nSiO₂ has been investigated for the synthesis of various substituted phthalazine-ones as well as selective synthesis of mono- and bis-phthalazine-ones as imperative biologically active compounds. The reaction has been carried out under solvent-free conditions, simple work-up procedure and the products were obtained in excellent to good yields. Moreover, the catalyst was reused five times without decay in catalytic activity performance.

Keywords: 4-methyl-1-(3-sulfopropyl)pyridinium hydrogen sulfate; heterogeneous acidic ionic liquid; impregnation; phthalazine-one derivatives; solvent-free

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