

- Title:** Ultrasound-assisted regioselective ring opening of epoxides with nitrogen heterocycles using pyrrolidonium and imidazolium-based acidic ionic liquids
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- Abstract:** Imidazolium and N-methyl-2-pyrrolidonium ionic liquids under ultrasound irradiation were developed as a green and expeditious approach for C-alkylation and N-alkylation of the nitrogen heterocycles including indoles and imidazoles with aliphatic and aromatic epoxides. Ionic liquids were used with a dual role of catalyst and solvent. The highest yield (85 %) was obtained with N-methyl-2-pyrrolidonium dihydrogen phosphate [H-NMP]H<sub>2</sub>PO<sub>4</sub> as a pyrrolidonium ionic liquid under ultrasound at 50 kHz, with a reaction time of 60 min and reaction temperature of 60 °C. The combination of ionic liquids and ultrasonic irradiation was found to be an effective, green and eco-friendly method for alkylation of indoles and imidazoles.