

## TRIPLE-ROLE PROTIC IONIC LIQUIDS AS AN EMERGING TOOL IN ORGANIC SYNTHESIS

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Modern demands of synthetic chemistry require the selection of reaction conditions, providing both high yields of the target products due to high chemo-, regio-, and stereoselectivity and conformity with the fundamental principles of green chemistry. Using protic ionic liquids (PILs), *i.e.*, low-melting salts of Brønsted acid and base, is an attractive solution to these challenges.

Recently, we proposed a novel concept of triple-role PILs in organic synthesis, *i.e.*, a solvent, an acid catalyst, and a reagent – a source of a nucleophile. We demonstrated the efficiency of this concept in the nucleophilic ring-opening of donor-acceptor (DA) cyclopropanes applying 1-methylimidazolium thiocyanate PIL<sup>1</sup>. We found unusual chemoselectivity of the ambident thiocyanate ion for this process; 3,5-disubstituted pyrrolidine-2-thiones – products of the formal (3+2)-cycloaddition of DA cyclopropanes with isothiocyanic acid – were formed exclusively.

### Triple Role of Protic Ionic Liquid



Then, the scope of this emerging concept was expanded on other classes of organic substrates. For this purpose, we varied reaction conditions, a base<sup>2</sup> and anionic<sup>3</sup> part of PIL.

### References

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