SALTS OF *N*-HETEROCYCLIC COMPOUNDS AS CATALYSTS IN CYCLIC CARBONATES PRODUCTION

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Cyclic carbonates are widely used as aprotic solvents, electrolytes in lithium batteries, intermediates for the production of fine chemicals, and precursors for the production of polymers. The preparation of cyclic carbonate via cycloaddition of carbon dioxide and epoxide has promoted interest due to the economic and environmental benefits. This type of reaction usually requires a suitable catalyst to achieve high yields of cyclic carbonates under mild conditions. Thus, our work was focused on new heterogeneous catalysts based on salts of *N*-heterocyclic compounds. The catalysts were prepared in two steps: first, the modification of support material, MCM-41, by halogenopropyl trimethoxysilane was performed, followed by the reaction with *N*-heterocyclic compound (pyridine, quinolone, pyrimidine, 1-methyl imidazole, 1,2,4-triazole, 3-methyl pyrazole, and 8-hydroxy quinoline). Characterization of prepared material confirmed the successful modification of MCM-41 by halide (bromine and iodine), and the presence of *N*-heterocyclic compound in the salt form. The catalytic activity of prepared materials was verified in a model reaction of carbon dioxide and styrene oxide. The influence of the catalyst structure on its activity was observed. The highest yield of styrene carbonate was reached using MCM-41-supported 1-methyl imidazolium iodide (MCM-I-im) under the following reaction conditions: 120 °C, 1.2 MPa, 12.5 wt.% of MCM-I-im and toluene as a solvent. The activity of used catalysts decreased in the row: MCM-I-*N* > MCM-Br-*N* > MCM-Cl-*N*. The selectivity to styrene carbonate was almost 100 % in all cases. The possibility of the reuse of catalyst was also investigated. Bromine and iodine-based catalysts were successfully reused without significant loss of activity. These materials represent a promising alternative to commercially used catalysts for the production of cyclic carbonates.