Microwave-assisted synthesis of MgO nanostructures using ionic liquids and its catalytic activity in organic transformation

JADHAV ARVIND, 서정길†
명지대학교
(jgseo@mju.ac.kr†)

Magnesium oxide (MgO) nanostructures were prepared via one-step microwave-assisted synthesis in five different designer structural directing ionic liquids such as monocationic and dicationic based on (N-methyl imidazolium and 3-methyl pyridinium) cations with combination of various anions. The selection of designer solvent monocationic and dicationic with respect to their counter anions in the presence of microwave irradiation, different MgO nanostructures morphology such as nanoflakes, connected elongated nanoparticles, hexagonal nanoparticles, nano-capsules, and irregular nanoparticles was obtained. The obtained nanostructures were characterized by modern techniques. In addition, for the application point of view, the prepared nanostructures were applied in catalytic amount for the synthesis of chalcone at ambient condition. As a result, 100 % conversion of reactants and various substituted chalcones were synthesized in good yield with competent selectivity. Furthermore, MgO nanostructures were recycled several times without loss in textural property and catalytic activity. This work was supported by Basic Science Research Program through the NRF funded by Ministry of Education (NRF-2013R1A1A2060638).