

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

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Magnesium oxide nanostructures were prepared via one-step microwave-assisted synthesis using different ionic liquids such as monocationic and dicationic based on (N-methyl imidazolium and 3-methyl pyridinium) cations with combination of various anions. Various MgO nanostructures such as nanoflakes, connected elongated nanoparticles, hexagonal nanoparticles, nano-capsules, and irregular nanoparticles were obtained depending on the type of ionic liquids and 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 KCRC through the NRF funded by Ministry of Science, ICT, and Future Planning (NRF-2014M1A8A1049258).