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Microwave-assisted synthesis of metal oxides nanoparticles: An efficient heterogeneous catalyst for applications in pollution control technologies

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Metal oxides and magnetic nanoparticles have been recognized as a class of nanostructured materials of current interest due to its well-known outstanding physical and chemical properties; especially when used in combination with other metal nanoparticles. These kinds of nanostructured materials play an important role in many aspects of research ranging from catalysis and biology to material science, advanced technological, medical applications, and green chemistry. The metal oxide nano catalysts are also of great importance in improving the thermal-catalytic decomposition performance. The advanced and unique magnetic, electronic, and catalytic properties of the materials in the nano scale attracted research centers to investigate this area of science deeply. In the field of catalysis; separation of catalysts is a vital step especially in medical and therapeutic applications and mainly in cross coupling reactions. The catalytic effect of magnetic nanoparticles is considered one of the hot topics as an important area of research due to its unique role including but not limited to huge industrial applications. It is well known that one of the important issues is catalyst separation. The catalyst that can't be recovered or recycled from the reaction mixture is generally not preferred in chemical industry even if it is a highly active catalyst. Recently, there has been an increasing trend towards using these kinds of magnetically recoverable nanomaterials in order to develop green chemical synthetic processes. By using magnetic nanoparticles as a support; it is easy to recover these catalysts by applying a strong external magnetic field to make use of the paramagnetic character of these kinds of supports.

Biography

Hany A Elazab was awarded his PhD degree in Chemical Engineering in 2013. He is a (VCU) Alumni Life Member, a member in several professional and scientific affiliations and also a member by invitation in Phi Kappa Phi International Honor Society (PKP) and in Golden Key International Honor Society in USA as recognition for his academic achievements during his PhD study. Then, he joined Military Technical College (MTC) as a lecturer in Chemical Engineering Department until he was retired from the Egyptian Armed Forces as a Lieutenant Colonel in 2015. He had the honor to join the British University in Egypt (BUE) as an Assistant Professor (Lecturer) in the Faculty of Engineering in the Chemical Engineering Department since September 2015.

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