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Radha Tomar et al., Organic Chem Curr Res 2018, Volume:7
DOI: 10.4172/2161-0401-C1-022

4th European
ORGANIC CHEMISTRY CONGRESS
March 01-03, 2018 | London, UK

Green nanoporous zeolites for multifunctional waste managing applications

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Zeolites have the chemical formula $M_{x/n}[(AlO_2)x(SiO_2)y].wH_2O$, where the charge-balancing nonframework cation M has valence n, x is 2.0 or more, and y is the moles of water in the voids. The Al and Si tetrahedral atoms, or T-atoms, form a three-dimensional (3D) framework of AlO_4 and SiO_4 tetrahedra linked together by shared oxygen ions. Although SiO_4 tetrahedra are charge balanced, AlO4 tetrahedra has a negative charge balanced by a positive charge on M while water molecules lie within the pores of zeolites. The water can be expelled upon by heating and evacuation and may be replaced by a number of small inorganic and organic guests. We are developing novel nanoporous zeolite materials for the treatment of waste including radioactive, toxic gas/chemicals separation, pesticide/herbicide management, sewage treatment etc. Zeolite acts as auxiliary as well as functional support in gas sensing. Zeolites has been modified dually i.e. both surface modified and ion exchanged present inside in the pore cavity. Also several polymer based composites has been synthesized for gas sensing purposes. This modification in zeolite structure increases its sorption capacity, sensitivity and recyclability. The parent sodium form was also modified to proton form to increase their catalytic activity and further applying for organic drug synthesis.

Recent publications

1. Mir M A, Bhat M A, Naikoo R A, Dipak P, Bhat Rayees , Tomar R and Sharma P K (2016) Fabrication of polyaniline/zeolite composites and their response towards nitrogen dioxide. Microporous and Mesoporous Materials 233:53-61.
2. Naikoo R A, Bhat S U, Tomar R, Khanday W A, Dipak P, Mir M A and Tiwari D C (2016) Polypyrrole and its composites with various cation exchanged forms of zeolite X and their role in sensitive detection of carbon monoxide. RSC Adv. 6:99202.
3. Mir M A, Naikoo R A, Bhat S, Tomar R, Bhat M A, Bhat R A, Dipak P and Tiwari D C (2016) Effect of different variables on the electrical conductivity sensitivity of synthesized zeolite/polymer composites for various gases: a review. American Chemical Science Journal 13(2):1-18.
4. Naikoo R A, Mir M A, Bhat S U, Tomar R, Bhat R A and Malla M A (2016) Biological activities and synthetic approaches of dihydropyrimidinones and thiones –An updated review. Current Bioactive Compounds, 12:236-250.
5. Bhat S U, Naikoo R A, Mir M A and Tomar R (2016) Synthesis of tetra-substituted imidazole derivatives by condensation reaction using zeolite H-ZSM 22 as a heterogeneous solid acid catalyst, International Journal of Current Pharmaceutical Research 8(1):36-39.

Biography

Radha Tomar is currently a Professor and Head of the School of Studies in Chemistry, Jiwaji University, Gwalior, India. Her research work experience is of more than 30 years on material synthesis, their characterization and applications in various fields viz. radioactive waste management, in catalysis etc. She has awarded PhD to more than 32 students. She is a Life Member of various professional societies such as ICC (Agra), ICS (Kolkata), ISC (Kolkata), IANCAS-BARC, (Mumbai), ITAS-BARC (Mumbai), AIEPA (USA), etc..

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