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Modification of Clay for multi-purpose end use and applications

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Clays find wide range of applications in various areas of science due to their natural abundance and the propensity with which they can be chemically and physically modified to suit practical technological needs. In this study, organobentonites were synthesised, characterized and used as adsorbents to remediate organic contaminants in hydrocarbon spills and effluents from the petroleum refining industry. The organobentonites prepared using cetyl tri-ammonium bromide (CTAB) was characterized using x-ray diffraction (XRD), Thermogravimetric analysis (TGA), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The cation exchange capacity (CEC) of the bentonite clay was 165 meq/100g of clay. Adsorptive properties of the obtained material was in accordance with its organophylicity

Biography

Theresa O. Egbuchunam, is an Associate Professor of Materials Chemistry and presently the Head, Department of Chemistry, Federal University of Petroleum Resources, Effurun, Delta State, Nigeria. She has extensive research experience in the chemistry of polymer materials and has written and published extensively in local and international journals with over 30 journal publications.

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Porous metal-organic frameworks for selective carbon dioxide capture

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Development of efficient methods for capturing carbon dioxide from the industrial flue gas, which contains not only CO_2 but also other gases such as N_2, H_2, and H_2O depending on the combustion method, becomes an important issue in recent scientific community. Porous metal-organic frameworks (MOFs) have potentials to be applied in gas storage and separation due to their high internal surface areas, tunable pore dimensions, and surface functionalities. We have prepared MOFs that are capable of adsorbing large amount of CO_2, but they also adsorb large amount of other gases. In order to make MOFs selectively adsorb CO_2 over other gases, we have constructed highly flexible 3D networks that allow their gates to open and close only for CO_2. We have also modified pores of MOFs by inserting an organic ligand post-synthetically, impregnating metal ions, and including polyamines, and have achieved excellent CO_2 capture capability.

Biography

Myunghyun Paik Suh is a Professor at Department of Chemistry, Seoul National University, Korea (South). She received BS degree from Seoul National University and completed her PhD (Inorganic Chemistry) at the University of Chicago. She has published more than 110 papers in reputed journals and served as an editorial board member of Coordination Chemistry Reviews (1997-present), European Journal of Inorganic Chemistry (2000-2010), Chemistry, an Asian Journal (2013-present), and Bulletin of Chemistry Society-Japan (2005-present).

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