

The Advanced Applications of Earth Materials based upon the Adsorption and Absorption Processes



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Earth materials are unevenly distributed in the world in different forms and phases. Solid earth materials play an outstanding preface among earth materials in other phase because of the availabilities in their manifold forms both natural or manmade forms such as the bulky forms and powdered forms. Adsorption is an outstanding characteristic regarding some solid materials based upon the adsorption capacities of such materials with respect to some specific compounds that presence in liquids and gases. Clays and dolomites are predominantly having multi physic-chemical characteristics. As the general outcomes of most of recent researches regarding earth materials, there were observed some specific characteristics from clays, dolomites, feldspar and some other minerals including the adsorption character. In the existing research there were expected to characterize three different selected clay varieties and a selected dolomite variety in microscopically and chemically. The clay samples and dolomite samples were collected from the relevant locations in Sri Lanka and a few of representative samples were characterized using X-ray fluorescence (XRF) spectrometer, Fourier transforms infrared (FT-IR) spectrometer and scanning electron microscope (SEM). Our results confirmed that the presence of Fe as the most abundant element in three different clay types and Ca as the most abundant element in dolomite according the XRF characterization, presence of kaolinite, montmorillonite and some other Fe minerals in all of clays such as muscovite and calcite as the major mineral in dolomite according to the FT-IR characterization and there were observed some porous structures in all of clays and some cleavage planes in dolomites according to the SEM micrographs. Based upon above results and literature reviews of them, it is possible to recommend some clay species and dolomites with similar compositions of these clays and dolomites for the developments in water treatment applications to remove some heavy metals, pathogens, organic pollutants and hardness from different types of waste water due to the adsorption capacities of such clays and dolomite which can also be enhanced with some possible alterations such as the nano-particles, nano-filters and pallets.

Biography:

Mr. Suresh Aluvihara obtained his first degree B.Sc. (Hon's) in the year 2017 from a recognized government university in Sri Lanka. Then he commenced his postgraduate studies at the department of Chemical and Process Engineering, University of Peradeniya, Sri Lanka. At present he is having an excellent research profile with about 45 journal papers, approximately 50 abstracts and a few of conference papers in highly reputed conferences around the world. In the consideration of his conference history he has been appointed as a keynote speaker, invited speaker and featured speaker in world recognized research conferences in various venues in the world. In addition that he has participated in a few of training workshops in the world. His research interests are Earth Engineering, Material Engineering, Environmental Engineering, Water Engineering, Agricultural Soil Science and relevant disciplines.