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Preliminary analysis of Sri lankan clay species on behalf of the water treatments and subduing of microorganisms

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Water pollution is a compelling problem around the world with the increasing of water consumption and the accretion of the circumstances of water consuming. As a limited resource, it is necessary to be treated the contaminated water while undergoing some appropriate techniques. According to the environmental rules and regulations, there were enacted a set of rules and regulations for the releasing of consumed water to the environment. In the categorization of water treatment methods, the disinfection has been identified as a critical stage especially in drinking water treatments. The adsorption capacity is a leading characteristic of clay which is much useful in the water treatment applications. In the existing research there were expected to characterize three of selected clay varieties based upon the purpose of the investigation of the preliminary characteristics of those clay types. The representative clay samples were collected from Matale, Maduragoda and Dankotuwa areas which are recognized as the abundant area of fine grained clays that much suitable for roof tile industry. The collected clay samples were chemically analyzed using X-ray diffraction (XRD) spectrometer, X-ray fluorescence (XRF) spectrometer and Fourier transform infrared (FT-IR) spectrometer. The obtained results showed the presence of Fe, Zr, Ba, Ti and K as the major elements, kaolinite, quartz, glauconite, muscovite and marcasite as the common minerals in such clays. In the considerations of advanced characteristics of such minerals, kaolinite, glauconite and marcasite have been identified as strong adsorbents for some specific compounds such as some heavy metals, radioactive elements and pathogens and some of ferrous minerals may have the supporting capacities in the catalytic activities for some chemical reactions that combining with some specific solid compounds such as activated carbon. Therefore, as the suggestions, it is possible to recommend the developments and enhancements for such clays for the uses in the waste water treatment applications and catalytic activities as a supporting material in various forms such as the bulks, composite materials or nano-materials.

Speaker Biography

Suresh Aluvihara has completed his first degree in the year 2017 from a recognized government university in Sri Lanka. He is a postgraduate research scholar at the Department of Chemical and Process Engineering, University of Peradeniya, Sri Lanka. He has over 30 research publications that have been cited over 7 times with Hi- index publications. He has participated over 25 world recognized research conferences under the role of keynote speaker, invited speaker and featured speaker. He is serving as an editor and an editorial board member of a few of reputed journals in the disciplines of Earth Engineering, Chemical and Environmental Engineering and Material Engineering. In addition that he has been awarded as a best young scientist and best young researcher in a few of research competitions held in the year 2022.

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