

Ultrasonic Assisted Application of Organoclay As A Sorbent For Treatment of Textile Wastewater

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From the recent years, textile industry effluent becomes one of the intense environmental issues. The textile industries utilize synthetic chemical dyes within its various textile operations and processes like bleaching, coloring, finishing and printing operations have resulted within the unleash of huge amounts of industrial wastewater that contain dyes. Textile effluent have a high value of BOD and COD, so these dyes are dangerous to biological life. They also cause rapid consumption of DO in water bodies in which they are discharged. So, most of the dyes are unsafe and biologically intractable in nature so conventional biological treatment is not an efficient option for textile wastewaters treatment. According to Pakistan Council of Research in Water Resources (PCRWR), the wastewater generated by industries are less than 8% which is being treated in Pakistan and the remaining wastewater is disposed of into the Rivers, Irrigation canals, vegetable farms and drains. Wastewaters from textile industries contain a variety of dyes that are of high concern for human and aquatic life and they need to be removed before their discharge into waterways. In this research, organoclay was used along with ultrasonic bath for the degradation and decolorization of dyes and comparison of sono-electric reactor (SER) and ultrasonic assisted application of organoclay was done. Efficiency of organoclay along with electrochemical and ultrasonic bath was also compared individually. Research results show that the most efficient method for the removal of dyes from textile wastewater is the use of organoclay along with ultrasonic bath. The percentage removal efficiency for the treatment of textile wastewater by using organoclay with ultrasonic bath was found to be almost 99% at pH 4 and the removal efficiencies of SER, ultrasonic bath, electrochemical reactor and organoclay are 87.75%, 93%, 92% and 98.38% respectively. It was also concluded that these both methods were dependent on pH of the wastewater. Ultrasonic assisted application of organoclay is not a time consuming process unlike ultrasonic bath, electrochemical and SER method.

Biography

Basem Mohammed Al-Sakkaf, PhD Scholar from Republic of Yemen. I am a Ph.D scholar in the final year in Department of Civil Engineering, University of Engineering and Technology Taxila 47080, Pakistan. Last Degree earned: preliminary Ph.D. from Department of Civil Engineering, University of Engineering and Technology Taxila 47080, Pakistan, MSc in the Department of Civil Engineering (Water Engineering and Environmental) from Sana'a University – Yemen, and BSc from Thamar University – Yemen, i worked as a lecture in the Department of Civil Engineering Thamar University - Yemen. I am researcher and specialized in the treatment of industrial wastewater using physical and chemical methods.