EFFECT OF OPERATING PARAMETER ON OIL SPILL REMOVAL FROM SEAWATER BY PKFAD/CHITOSAN-COATED MAGNETIC NANOSORBENTS

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2022

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This report is submitted in partial fulfillment of the requirements
needed for the award of
Bachelor of Chemical Engineering (Environment) with Honours

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AUGUST 2022

ACKNOWLEDGEMENT

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ABSTRACT

Marine oil spills are one of the most common sources of water contamination, resulting in significant environmental and economic damage. Water pollution disrupts the ocean's ecological system, resulting in significant losses in aquatic species. Nanotechnology has the ability to clean up oil contamination. In the present study, the alkaline co-precipitation approach was used to make a PKFAD/CS-coated magnetic nanosorbent. The magnetic nanosorbent was used to remove petroleum-based diesel from oil-in-water emulsions by adsorption. The influence of adsorption time, pH, and adsorption dose on the efficiency of the synthesised magnetic nanosorbent was investigated using a adsorption experiment. The optimal operating parameters of PKFAD/CS-coated magnetic nanosorbent was found that at pH 8, the optimal dosage is 1500 mg/L, and the best adsorption time is 90 min . The capacity of adsorption of an oil-water emulsion was used to determine the magnetic nanosorbent's reusability. It was discovered that the PKFAD/CS-coated nanosorbent could withstand three cycles of oil-water separation. The research lays the groundwork for the creation of a viable, eco-friendly material for the remediation of oil and hydrocarbon pollutants from water bodies in environmental cleanup.