Research, Design of the MnO2/Cellulose Acetate Nano-Filter Membrane Equipment System Applied to Treat Wastewater Containing Pb2+, Cd2+, TSS, COD, E. coli and Coliform into Domestic Water

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DEFINITION OF THE THEME The idea of finding solutions to treat toxic wastewater into clean water, raising water-saving awareness to avoid waste and conserve water sources to provide clean water for people. "USE GARBAGE FOR HANDLING GARBAGE" Vietnam currently ranks 14th in the area of sugarcane cultivation, so agricultural waste is a huge waste of sugar cane waste. Bagasse has a high content of cellulose (45-55%), using bagasse derived from nature, safe, environmentally friendly. This is a new research direction to create the optimal solution, economic efficiency and towards sustainability in the current problem of wastewater treatment. RESEARCH QUESTIONS Can we take advantage of agricultural waste to create useful materials to treat waste water? METHODOLOGY REMOVE CELLULOSE FROM THE BAGASSE Pure cellulose Method: FT-IR, NMR,... spectrum SYNTHETIC CELLULOSE ACETATE FROM CELLULOSE BAGASSE 3 -OH groups in cellulose are acetylated, CA is durable with heat. Method: FT-IR, XRD,… spectrum MAKE UP UP MnO2 The MnO2 has nano-sized pores. Method: XRD, SEM,... image and spectrum SYNTHETIC MnO2/CA 6% MnO2/CA 6% nano-sized, possible good re-adsorption capacity. Method: XRD, SEM,... spectrum and image DESIGN OF THE MNO2/CA NANO FILTER EQUIPMENT SYSTEM Take nano-filtration membrane into the column filter. Fabricate nano-filter membrane equipment system. Water quality according to Viet Nam standards are within permitted limit. SCIENTIFIC CONCLUSION Successfully synthesized the materials MnO2/CA nano-filtration membrane and designed fabricate nano-filter membrane equipment system. Affirming the use of the MnO2/CA nano-filter membrane from bagasse to treat wastewater able to spread in the community, bringing both economic efficiency and practical aspects.

Awards Won: