

The Clarification of Palm Oil Wastewater Treatment by Coagulant Composite from Palm Oil Ash

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Abstract : In this work focus on clarification in palm oil wastewater treatment by using coagulant composite from palm oil ash. The design of this study was carried out by two steps; first, synthesis of new coagulant composite from palm oil ash which was fused by using Al source combined with Fe source and form to the crystal by the hydrothermal crystallization process. The characterization of coagulant composite from palm oil ash was analyzed by advanced instruments, and The pattern was analyzed by X-ray Diffraction (XRD), chemical composition by X-Ray Fluorescence (XRFS) and morphology characterized by SEM. The second step, the clarification wastewater treatment efficiency of synthetic coagulant composite, was evaluated by coagulation/flocculation process based on the COD, turbidity, phosphate and color removal of wastewater from palm oil factory by varying the coagulant dosage (1-8 %w/v) with no adjusted pH and commercial coagulants (Alum, Ferric Chloride and poly aluminum chloride) which adjusted the pH (6). The results found that the maximum removal of 6% w/v of synthetic coagulant from palm oil ash can remove COD, turbidity, phosphate and color was 88.44%, 93.32%, 93.32% and 93.32%, respectively. The experiments were compared using 6% w/v of commercial coagulants (Alum, Ferric Chloride and Polyaluminum Chloride) can remove COD of 74.29%, 71.43% and 57.14%, respectively.

Keywords : coagulation, coagulant, wastewater treatment, waste utilization, palm oil ash

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