

Effect of Polymer Residues for Wastewater Treatment from Petroleum Production

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Abstract : For petroleum industry, polymer flooding is the one of the main methods in enhanced oil recovery (EOR) that is used water-soluble polymer such as partially hydrolyzed polyacrylamide (HPAM) to increase oil production. It is added to the flooding water to improve the mobility ratio in the flooding process. During the polymer flooding process, water is produced as a by-product along with oil and gas production. This produced water is a mixture of inorganic and organic compound. Moreover, produced water is more difficult to treat than that from water flooding. In this work, the effect of HPAM residue on the wastewater treatment from polymer flooding is studied. Polyaluminium chloride (PAC) is selected to use as a flocculant. Therefore, the objective of this study is to evaluate the effect of polymer residues in produced water on the wastewater treatment by using PAC. The operating parameters of this study are flocculant dosage ranging from 300,400 and 500 mg/L temperature from 30-50 Celsius degree and HPAM concentrations from 500, 1000 and 2000 mg/L. Furthermore, the turbidity, as well as total suspended solids (TSS), are also studied. The results indicated that with an increase in HPAM concentration, the TSS and turbidity increase gradually with the increasing of coagulant dosage under the same temperature. Also, the coagulation-flocculation performance is improved with the increasing temperature. This can be applied to use in the wastewater treatment from oil production before this water can be injected back to the reservoir.

Keywords : wastewater treatment, petroleum production, polyaluminium chloride, polyacrylamide

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