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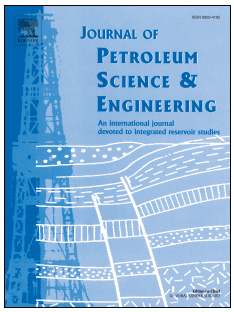

Oil recovery from tank bottom sludge using rhamnolipids

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Oil Recovery from Tank Bottom Sludge Using Rhamnolipids

Abstract: Oil sludge has become a major impediment to the development of the petroleum and petrochemical industries with the growth of oil production worldwide. In this research, rhamnolipid biosurfactant produced by *Pseudomonas aeruginosa* was used to recover oil from oil tank bottom sludge. The optimum value of the fermentation broth (with rhamnolipid biosurfactant concentration of 5.4 g/L) addition was a volume fraction of 2 % (v/v). Optimal temperature (65 °C), liquid/solid ratio (3:1), washing time (3 h), and agitation intensity (300 rpm) for oil recovery were determined. Wastewater from oil recovery was flocculated with 400 mg/L polyaluminum chloride for reuse. The moisture of the recovered oil was (0.42 ± 0.12) %, which could directly enter into the refinery process. The solid particles in the oil sludge exhibited a porous structure that adsorbed a significant amount of oil and increased the difficulty of oil recovery. Results showed that the fermentation broth of *P. aeruginosa* can be used to recover oil from oil sludge and has potential industrial applications.