Demulsification of crude oil emulsion via electrocoagulation method

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ABSTRACT
During oil production and processing emulsions were formed and seriously cause problem, both in terms of chemicals used and production losses. The traditional methods of breaking crude oil emulsions are disadvantageous from both economic and environmental perspectives. In this paper, the potentials of electrocoagulation technology in demulsification of crude oil emulsion were investigated. The crude oil obtained from Petronas Ponapean Melaka, Malaysia. For stability performance test, Span 80 was used as emulsifier, while for chemical demulsification performance test, Hexylamine was used. The electrocoagulation method was used for demulsification of W/O emulsion. For electrocoagulation demulsification, three factors namely; voltages 15-50 V, current density 1.04-3.94 mAcm-2, and concentration of NaCl 0.5-2.5 g/L. The electrocoagulation demulsification showed that the best water separation efficiency was achieved at voltage 50 V, current density 3.94 mAcm-2, and NaCl concentration 2.5 g/L, whereas the separation efficiency reached at 98%. Results have shown the potential of electrocoagulation method in separation of water-in-crude oil emulsions, W/O.

KEYWORDS:
Crude oil; demulsification; electrocoagulation; chemical; W/O emulsion