

عنوان مقاله:

Experimental Study on Precipitated Asphaltene Biodegradation Process Using Isolated Indigenous Bacteria from Reservoir water

محل انتشار:

شانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1397)

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خلاصه مقاله:

Asphaltene precipitation during oil production is a serious problem and causing a dramatic increase in the cost of production. Therefore, mitigating the precipitation and removing the precipitated asphaltene from the facilities of oil industries is of vital importance. In this study, the possibility of asphaltene biodegradation using bacterial species isolated from reservoir water sample of an oilfield located in Southwest of Iran has been investigated. Based on the achieved designed experiments results using Response Surface Methodology, identified bacteria were cultured in the flasks on pure and consortium. Three levels of temperatures, salinity, pH, initial asphaltene concentration as substrate were considered as growth medium parameters and the flasks were incubated for 60 days. The CHNS and FT-IR analysis have been performed to evaluate the asphaltene elemental and structural alteration after the biodegradation process. 41.51 % was the maximum asphaltene biodegradation that caused by *Bacillus cereus* YSH-4 at 45°C, salinity 80 g.l-1, pH 6.50 and initial asphaltene concentration as 35 g.l-1. Furthermore, carbon, hydrogen and nitrogen content of treated samples decreased significantly during the bacterial activity and alkyne groups and aldehyde groups in asphaltene molecules have the least and most resistance to biodegradation, respectively.

کلمات کلیدی:

Asphaltene Biodegradation, Bacteria, Optimization; Response Surface Methodology

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