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PRESS RELEASE

IIT (ISM) faculty members' project proposal for development of polymer augmented surfactant based micro-emulsion for ensuring enhanced oil recovery fetches fund grant of Rs 75 lakh under SPARC of Ministry of HRD.

The project proposal of Prof Ajay Mandal of Petroleum Engineering Department of IIT (ISM) and his team for development of surfactant based micro emulsion has been principally selected for a fund grant of Rs 75 Lakh under the Scheme for Promotion of Academic & Research Collaboration (SPARC), a scheme of ministry of HRD meant for improving the research ecosystem of Higher Educational Institutions.

The fund for the project is likely to be received by the team of four, including two foreign researchers within two three months.

The team comprising of Professor Keka Ojha another professor of Petroleum Engineering Department of the institute who also happens to be better half of Prof Ajay Mandal and international researchers Prof Lau Hon Chung of NUS Singapore (International Principal Investigator) and Prof Ofer Manor of Technion, ISRAEL has submitted the idea of the two years project on November 11, 2019 which was approved during last weekend (June 10, 2023)

“Increasing world consumption of oil, coupled with declining reserves, is attracting new ideas and methodologies for producing crude oil from mature reservoirs” said Prof Mandal.

“Even after the exhaustion of natural drive and water-flooding processes, about two-thirds of the original oil in place (OOIP) remain unproduced” further said Mandal and added that enhanced oil recovery (EOR) processes encompass many methods for increasing the recovery of remaining oil in a reservoir after the natural pressure is depleted.

“Polymer augmented surfactant-based micro-emulsion flooding is a promising enhanced oil recovery (EOR) technique involving the use of water-soluble polymeric compounds to stabilize the injected surfactant-based micro-emulsion fluid, which in turn mobilizes and extracts in-situ crude oil from a petroleum reservoir” explained Mandal and added that polymer increases the viscosity of the injected micro-emulsion, thereby reducing the water/oil mobility ratio.

“This allows a better sweep of crude oil trapped within reservoir pores by capillary and viscous forces and is beneficial in controlling crude oil mobility” elaborated Mandal and added that incorporating polymer/polymeric compounds comprises various enhanced physicochemical attributes and diverse research areas.

The literature on polymer-augmented micro-emulsion-based EOR is rare.

Given the importance of this study in the world oil production industry, this proposal paves the way toward developing a systemized approach toward the screening, characterization, optimization, and application of micro emulsions stabilized by the polymer in the field of tertiary oil recovery.

Experimental and simulation studies will be performed to identify beneficial micro-emulsion compositions that can be used under subsurface conditions for the EOR application.

Rajni Singh

Dean (Media & Branding)