**Student Academic Board (SAB), Indian Institute of Technology Guwahati, Guwahati, Assam, India**

**A Review on the Status of Microbial Enhanced Oil Recovery in the Petroleum Industry**

Shilpa Nandi a\*, Lalit M. Pandey a b, Pankaj Tiwari a c

a Centre for the Environment, Indian Institute of Technology Guwahati, Guwahati 781039, Assam, India

b Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Guwahati 781039, Assam, India

c Department of Chemical Engineering, Indian Institute of Technology Guwahati, Guwahati 781039, Assam, India

\*E-mail: n.shilpa@iitg.ac.in

**Abstract**

**Research & Industrial Conclave 2023 "An amalgamation of Academia, Industry & Start-up”**

**"**

The global expansion in population, economic growth, increased energy demand, and intensive industrialization has led to the constant depletion of petroleum from conventional crude oil reservoirs. This as a result escalated various research to extract the remaining two-thirds of the trapped original oil in place (OOIP). Unconventional methods of tertiary oil recovery such as thermal, chemical, microbial etc. have been researched as a strategy in this regard to scale up and speed up the extraction of unrecovered crude oil. Henceforth, with the rapid surge for exploitation of unconventional crude oil reserves, the advancement and enhancement of clean-alternative technologies which are workable and feasible in nature utilizing biological metabolites are beginning to get awareness and recognition. Utilizing native microbes and the metabolic by-products of those microorganisms, this tertiary oil recovery technique improves oil mobilization. Despite the substantial number of studies that have been done on MEOR, the petroleum business has noticeably shown little to no fascination, which is apparent by the 400+ MEOR patents that are yet haven't been implemented by the petroleum industry. Because of the many advantages of the metabolites produced by microorganisms such as biosurfactant, biopolymer, this article gives an in-depth account of the phases of oil recovery, concentrating primarily on the microbial technique. Numerous research evaluating the MEOR possibilities and economics of biosurfactants have been summarised simultaneously focusing on the efficient activity of microbial consortia. Examining case histories from around the world including lab and field testing involving multiple microbial species that frequently work together in a microbial consortium to carry out crucial functions for instance crude oil degradation, allows the study to evaluate MEOR's previous results and prospects. In the case of both sandstone and carbonate reservoirs with various flow properties, the MEOR technique has been proven to significantly improve oil recovery around the globe. However, if additional study and analysis are neglected and remain unfinished, MEOR will remain unpractised instead of serving reliability.

Keywords: *Microbial enhanced oil recovery (MEOR), crude oil, microbial metabolic by-products, microbial consortia*

**Research & Industrial Conclave 2023 "An amalgamation of Academia, Industry & Start-up”**

**"**

**Research & Industrial Conclave 2023 "An amalgamation of Academia, Industry & Start-up”**

**"**

**Research & Industrial Conclave 2023 "An amalgamation of Academia, Industry & Start-up”**

**"**

**Research & Industrial Conclave 2023 "An amalgamation of Academia, Industry & Start-up”**

**"**