

COMBINED MICROBIAL SURFACTANT-POLYMER SYSTEM FOR IMPROVED OIL MOBILITY AND CONFORMANCE CONTROL

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ABSTRACT

Many domestic oil fields are facing abandonment even though they still contain two-thirds of their original oil. A significant number of these fields can yield additional oil using advanced oil recovery (AOR) technologies. Yet many independent producers do not have the capital to implement costly advanced recovery programs. Marginal wells are desperately in need of inexpensive AOR technologies to extend the life of oil and gas reservoirs with unrecovered reserves and prevent premature abandonment. To maintain domestic oil production at current levels, AOR technologies are needed that are affordable and can be implemented by independent oil producers of the future.

Microbial improved oil recovery (MIOR) technologies have become established as cost-effective solutions for declining oil production. MIOR technologies are affordable for independent producers operating stripper wells and can be used to extend the life of marginal fields. The diverse nature of microbial processes has facilitated development of MIOR systems to address several distinctly different oil production problems. The demonstrated versatility of microorganisms can be used to design advanced microbial systems to treat multiple production problems in complex, heterogeneous reservoirs.

The proposed research is focused to present the concept of a combined microbial surfactant-polymer system for advanced oil recovery. The surfactant-polymer system will utilize bacteria that are capable of both biosurfactant production and metabolically-controlled biopolymer production. This novel technology combines

complementary mechanisms to extend the life of marginal fields and is applicable to a large number of domestic reservoirs. This research project will be performed jointly by Bio-Engineering Inc., a woman owned small business, Texas A&M University and Prairie View A&M University, an Historically Black College and University. The project will consist of laboratory investigation of the microbial processes, followed by recovery experiments and simulation studies.

Graduate and Undergraduate Students Involved in the Project:

Mr. Jacob Tambe has worked on this research project since September 2001. Mr. Tambe has developed a method to grow several microbial cultures on our laboratories.

Mr. Raymond Davis, a Prairie View A&M undergraduate student, has also worked during Academic year 2001-2002 on this project.