

7th International Conference on Science and Development of Nanotechnology



Modification of Carbonate Surfaces and Liquid-Liquid Interfaces by MgO Nanocompounds

Nahid P. Khiabani^{1,2*}, Zahra Fakhroueian¹, Peyman Pourafshary³, Alireza Bahramian^{1**}

¹*Department of Chemical Engineering, University of Tehran, Tehran 11365-4563, Iran,*

²*R&D Department, Bonian Daneshpajouhan Institute, Gholhak Junc., Tehran, Iran*

³*School of Mining and Geosciences, Nazarbayev University, Nur-Sultan, Kazakhstan.*

ABSTRACT

The interfacial properties of liquid-liquid and solid-liquid interfaces play essential roles in the efficiency of different processes. For example, in some current methods, these properties are crucial for oil recovery. They are applied in different oil recovery methods using low salinity water, nanoparticles (NPs), and surfactants. These options are environmentally friendly and inexpensive agents. In this way, we prepared a MgO nanofluid applying for a free imbibition test. The base of the nanofluid is water. We found more than 70% of oil recovery at the temperature of 70°C. Furthermore, the interfacial tension (IFT) change and wettability alteration (WA) mechanisms were compared.

Keywords: Green Nanofluid, Free imbibition, Crystal growth, Wetting, Contact angle, Microemulsion.