Vladimir Abramov, J Pet Environ Biotechnol 2016, 7:5 (Suppl)
http://dx.doi.org/10.4172/2157-7463.C1.021

Vladimir Abramov

Russian Academy of Sciences, Russia

Ultrasonic technology for enhanced oil recovery: Viscosity reduction by ultrasonic treatment

The ultrasonic and sono-chemical method of EOR is one of the most promising methods, since it can be applied for the treatment of wells, which has already been subject of EOR, horizontal wells and heavy oil wells. It was developed over 30 years ago, but only today the state of the technique enables us to deliver enough energy to the perforation zone to show significant results. The method is based on years of research and involves not only ultrasonic treatment of the perforation zone, but also preliminary analysis of the perforation zone, determination of treatment intervals for selective treatment and subsequent pump-out using a specially designed jet pump. Only in such a way the method can be economically sound, especially in case of horizontal wells. The technology delivers an ultrasound frequency to the reservoir which has the impact of reducing skin damage, putting resins, asphaltenes and waxes back into solution, and increasing penetration into capillary resulting in enhanced production and recovery of oil. Average results are a doubling of production and in some cases up to over a 900% increase. In case of heavy oil the effect of viscosity reduction, caused by ultrasound is particularly important, since it contributes not only the increase of production, but also facilitates the transportation of oil. For such cases we have developed a sonochemical technique, which allows us to secure the viscosity reduction by adding chemicals afterwards.

Biography

Vladimir Abramov has completed his PhD at the Moscow Institute of Steel and Alloys. He is a Professor in Technical Sciences since 2007 and the Head of the laboratory of ultrasonic technique and technology in his institute. He has published more than 150 papers and patents and is a Member of the European society of sonochemistry and the World Association for Ultrasound Applications. In 2008, he received the Russian Government Prize for achievements in the field of science and technology. He has over 30 years of experience in the field of EOR.

abramova@physics.msu.ru

Notes: