J Pet Environ Biotechnol 2016, 7:5 (Suppl)
http://dx.doi.org/10.4172/2157-7463.C1.023

Synthesis and viscometric behavior of a novel associative polymer for enhanced oil recovery

Hassan Zabihi
London South Bank University, UK

Polymer flooding is a highly beneficial EOR technique to improve oil displacement. A large number of polymers have been developed to overcome some limitations of conventional polymers to enhance oil recovery. Hydrophobically modified water soluble polymers are a type that has been introduced to oil field application for the past two decades. The main characteristics of these polymers are their significant enhancement of water viscosity compared with the conventional polymers such as hydrolyzed poly acrylamide (HPAM) and their salinity tolerance that would be more important in the real application. In this study, Hydrophobically associative polymer poly-phenylacrylamide (PPAM) were prepared by an aqueous micellar copolymerization technique from acrylamide and a small amount of n-phenylacrylamide as hydrophobe monomer. The properties of poly-phenylacrylamide were investigated in aqueous solution under various conditions. The results showed that the solution properties were strongly affected by the microstructure of copolymer. The copolymers with hydrophobic microblocky structure exhibited large viscosity enhancement due to the inter-molecular hydrophobic association. The hydrophobic association thickening behaviors were also dependent on the number and length of the hydrophobic block in polymer chain. Non-linear viscosity relationship was found as increasing hydrophobe content, and a maximum appeared as a result of the competitive effect between inter- and intra-molecular hydrophobic associations. A rapid viscosity enhancement was observed upon the addition of SDS below its critical micelle concentration. Solution properties were further studied as a function of the polymer concentration, salinity, shear rate and temperature.

zabihi_hasan@yahoo.com

Sweet spots characterization in tight gas- A case study of Sulige gas field, China

Jia Ailin
China National Petroleum Corporation, China

The gas bearing area of Sulige gas field exceeds 40000 square kilometers in Ordos basin, the 1st and 2nd members of the Permian Shaanxi Formation and the 8th member of the Permian Shihezi Formation, are the major gas pay zones. Due to its low abundance and strong heterogeneity, it is challenging for large scale commercial development of this field. Therefore, looking for sweet spots is currently the priority. Comprehensive geological study confirmed that the reservoirs with coarse grain, high content of quartz are more easily lead to dissolution which is the most constructive diagenesis in Sulige gas field, and the dissolved pores are almost the basis of high quality reservoirs. So the sweet spots are located in the coarse grained sand-bodies with high content quartz, and these sand-bodies are mainly distributed in the lower part of the channel deposits and channel bar deposits. Now the answer is obvious, predicting channels especially the main river channels distribution is the key to search for sweet spots. Through seismic and geological study, first set up the typical log and seismic response characteristics of different types of sands, then carry out sedimentary facies, diagenesis, reservoir evaluation study and so on, finally simulate the channel development. On the base of the geological models, we can predict the sweet spots distribution. This technology has been applied in many blocks of Sulige gas field, the proportion of higher effective wells drilled in the past 5 years increased by a big margin.

jal@petrochina.com.cn