Ovidius University Annals of Chemistry Volume 16, Number 2, pp 249-252, 2005

The rheological behaviour of some bitumens in the hydrodynamic and alternating electric field

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Abstract The paper is intended to make a short investigation of the rheological behaviour of bitumen, which contains asphaltenes, resins, aromatic and saturate hydrocarbons with high molecular weight. The rheological tests show the non-Newtonian character of flow by shear of bitumen and presence of disperse phase that can be destructured during the tests. We used the shear of solution of bitumen in an electric cell coupled to an ordinary RV2 rotational viscometer in the range 15-25°C.This paper deals with the action of the hydrodynamic and alternating electric field at 50 Hz over the non-Newtonian fluid containing various types of molecules. The work presents the way of determining the average dipole moment for the molecules of the bitumen, by measurements on viscosity in the electric field, which changes the potential barrier of the flow.

Keywords: asphaltene, bitumen, colloids, electrorheology, non-Newtonian fluid, resin, rheological model

ISSN-1223-7221