

ABSTRACT

Direct application of infrared spectroscopy in the study of interfacial viscosity and elasticity of water-crude oil emulsion has produced interesting outcomes. In addition to molecular absorption, the near infrared (NIR) spectra are dependent upon several physical parameters, in which the most prominent is scattering from particles. It has been established that, as the particle size increases, more light is scattered by the sample which is reflected in the NIR spectrum as an upwards shift of the baseline. The specific determination of the interfacial viscosity and elasticity of an interface was carried out with dilational stress where the interfacial resistance to variations in area was consistently monitored. Time dependent measurements were made by simultaneously analyzing the interfacial tension and surface area of a drop, whose volume was periodically perturbed.

Keywords: Interfacial resistance near infrared spectrum, interfacial viscosity, water-crude oil emulsion interfacial tension, molecular absorption.