

ABSTRACT

A critical observation when comparing rheological properties of crude oil components was remarkable. With the diluted crude oils, the frequency dependence of the dilational modulus increased with its magnitude, especially when fractionated asphaltenes were diluted in a solvent. The crude oil systems which exhibited particularly low magnitude of the dilational modulus were from the heaviest crude oils in the sample set, on the other hand, the crude oil systems with greatest dilational modulus were from the highest crude oils. The totality of the characteristic time of relaxation of the crude oil-water interfaces were in the region below 10 seconds. Interestingly, the undiluted crude oil-water interfaces had similar interfacial properties as the diluted samples except for adjustment and reduced magnitude of the dilational modulus. In addition, the crude oil-water interfaces was observed to be soluble, which some observations pointed to intrinsic rheological properties of the interfaces.

Keyword: Fractionated asphaltene, interfacial properties, dilational modulus, crude oil-water interfaces, rheological properties, time of relaxation.