

## **Possible Role of Asphaltenes in Stabilization of Water in Crude Oil Emulsions**

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Asphaltene hierarchical aggregation contributes to W/O emulsion stability by forming a network structure within thin oil film separating approaching water droplets. This structure changes the rheology of the film forming oil to non-Newtonian, which prevents the film drainage at thickness less than about 50-100 nm. It also provides a steric stabilization mechanism to the system. Asphaltenes do not have well defined hydrophilic heads and hydrophobic tails and thus do not have amphiphilic character. Therefore, they are not similar to surfactants, and cannot stabilize emulsions the way classic emulsifiers do. The proposed stabilization mechanisms do not invoke any surfactant-like behaviour of asphaltenes. Instead they solely rely on asphaltenes aggregation propensity.