**Introduction**

What is an asphalt emulsion? Is it stable?

Some mechanisms have been proposed to explain the breaking phenomena of asphalt emulsions through the contact with mineral aggregates.

The aim of this work is the production of a model system to evaluate the viscosity’s evolution during the heteroflocculation process with the addition of a mineral aggregate.

**Formulation and Emulsification Process**

- **Dispersed phase**: Paraffin Oil, bp between 300 – 500 °C.
- **Continuous phase**: A solution of Cetylpyridinium Chloride at 0.003 M in distilled water.
- **Used tool and velocity**: IKA Ultraturrax at 24,000 r.p.m.
- **Emulsification’s temperature and time**: 30°C during 3 minutes.
- **Method**: Emulsification at 75/25 oil-in-water ratio and further dilution to 60/40 using distilled water.

**Sandstone’s purification and hydrophobation**

- Fontainebleau’s sandstone powder
- Up to 99% quartz
- Average particle size: 200 nm
- BET = 5 m²/g
- IEP < 2.5 pH value

**Adsorption kinetics and isotherm**

- Surfactant adsorption on sandstone takes place quickly
Average droplet size and distribution stay constant. Heteroflocculation does not take place when hydrophobized solids are added.

Physicochemical forces result in:
- Direct adsorption onto the solid surface.
- No migration of the surfactant to the solid surface and further coalescence.

Conclusions

- The viscosity of the remaining emulsion decreases with hydrophilic solids addition and the droplets size and distribution remain constant.
- The heteroflocculation takes place when the drops are attracted to the surface of the solid.

Conclusions

- Desorption of the surfactant from the droplets could be a very slow process, at least into the operating conditions used in this study case, avoiding the quick migration of the surfactant to the solids.
- Further experiences changing some parameters and compounds will allow us validating our proposed model.

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