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Inorganic salt forming investigations: Validating the photomicroscopy technique

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Inorganic salts fouling is one of the operational problems that pose major challenges to flow assurance of oil and gas exploration and production. In order to act effectively in the mitigation of this phenomenon, it is important to understand its behavior under the conditions in which they occur, i.e., on the "In Situ" pressures and temperatures. Photomicroscopy technique can be an effective tool to achieve this goal as it has the ability to provide measurement of the equivalent diameter of a particle - even if it is under to high pressures and temperatures. As this is not a widespread technique, as current laboratory methods are based on measurements under

ambient conditions, a photomicroscopy validation procedure is proposed. The aim is to compare photomicrography to a consolidated technology for determining particle or Drop Size Distribution (PSD or DSD). The procedure consists of the dispersion of solid calcium carbonate (CaCO_3) in water and simultaneous analysis by photomicroscopy and dynamic light scattering. Comparison of the PSD diagrams of the two techniques validates the procedure for ambient pressure and temperature. The next step is to perform this procedure on a pressurized and heated reactor.

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