Contribution ID: **249** Type: **Poster Presentation**

Complex Fluids –Thin Porous Materials Interactions revealed via Electrical Impedance Spectroscopy (EIS)

Tuesday, 31 May 2022 15:20 (1h 10m)

A brief introduction of the EIS technique , precedes the presentation of the two experimental setups, with planar and respectively cylindrical electrodes. Home made devices have been employed to study material properties (e.g. dielectric constants) of complex materials as well as physical phenomena as water evaporation of aqueous mixtures, complex liquid transport into porous paper, latex film formation. Each experimental setup was dedicated to a specific process; regarding the dielectric constant measurements, this was possible to be made with both setups and a comparison of the outputs is made.

EIS was used for:
i) water evaporation from liquid mixtures;
ii) liquid penetration into porous paper considering the same liquid and different papers (e.g. thickness), as well the same paper and various liquids;
iii) latex film formation –revealing the structure of the solid formed film, have been tackled via the EIS method.

The dynamics of the physical processes (e.g. evaporation rate, liquid absorption rate, phases in latex film formation) have been studied having time as a parameter. Theoretical models and computational simulations were used to analyze the experimental data and to improve our understanding.

The EIS results have been confirmed by HRSEM measurements on post-mortem samples. We consider the EIS as a valuable tool in these studies; however besides its advantages, we will discuss the limitations of the method, too.

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References

Time Block Preference

Time Block A (09:00-12:00 CET)

Participation

Unsure

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