

Accessory for HAAKE Rheometer

Du Noüy ring for interfacial rheology

The Du Noüy ring, commonly used for interfacial tension measurements, has been successfully applied to interfacial testing using a HAAKE rheometer. The relevant interfacial rheological properties, such as the interfacial shear viscosity or the interfacial storage and loss modulus can be determined quantitatively.

For the measurement the ring is positioned at the interface of two liquids or, in the case of a foam sample, at the interface of a liquid and a gas.

A commercial available Du Noüy ring made out of a Pt-Ir wire is clamped in an adapter (Fig. 1) for use with a HAAKE MARS or a HAAKE RheoStress 6000.

The lower part of the measurement cell consists of a glass cup which contains the sample. The universal container holder (order number 603-0304) can be used to hold the cup.

Since interfacial measurements are very sensitive regarding to contaminations the Du Noüy ring has to be flamed before each measurement.

Thanks to the sensitive normal force sensor of the HAAKE RheoStress 6000 and MARS rheometers the measuring position can be set automatically. During the measurement the dynamic interfacial shear moduli G'_i and G''_i (mN/m) were recorded.

Different measurements using the Du Noüy ring have been performed, such as measurements on (protein stabilized) emulsions and foams of food products as well as measurements on cosmetic products. Another example is interfacial measurements on the interfaces between different layers for curtain coating.

Fig. 3 shows the results for the stability of two different shaving foams. Significant differences could be measured. Both foams are stable over the measuring period of half an hour. The values of G'_i and G''_i of sample A are much higher than those of sample B, which means that sample A has a (much) stiffer structure. In addition sample A is more elastic than viscous ($G'_i > G''_i$) which results in a more comfortable application of the foam on the skin.

Key words

- HAAKE MARS
- HAAKE RheoStress 6000
- Du Noüy ring
- Interfacial rheology

Order Information:

603-0408 Du Noüy ring consisting of a Pt-Ir wire and an adapter for the HAAKE MARS / RheoStress 6000 (incl. 222-1276 universal 6 mm adapter and glass cup)

Necessary accessories:

Lower temperature control unit or universal container holder (603-0304) for an adaptation of the lower setup



Fig.1: Du Noüy ring with adapter

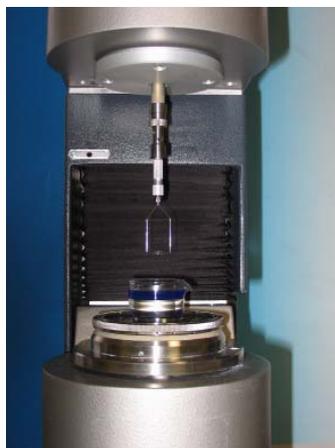


Fig. 2: Setup for interfacial rheology

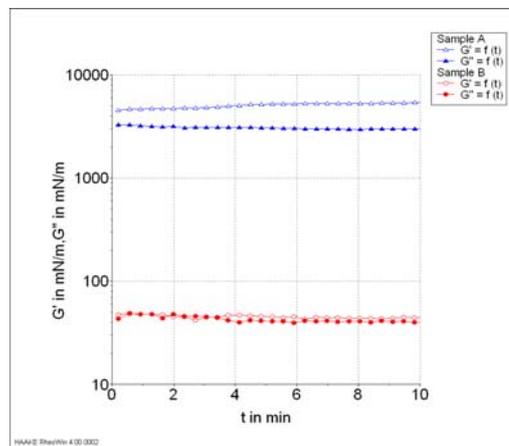


Fig. 3: Measurements on different shaving foams using a Du Noüy ring

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