

Linkam Optical Shearing Cell (CSS450)



The Linkam Optical Shearing System (CSS450) allows structural dynamics of complex fluids to be directly observed via standard optical microscopy or other light techniques under precisely controlled temperature and various shear modes.

Instrument specifications

The sample is loaded on a quartz plate with an observation window of 2.5 mm \varnothing .

The instrument has a temperature range from ambient up to 450 °C with temperature rates varying from 0.01°C up to 30°C per minute.

The stepper motor allows 25000 steps per revolution. Three operation modes can be set: oscillatory, step and steady. The gap can be changed between 5 and 2500 μm .

Linksys software is used as an interface between the user and the instrument.

Typical setups and measurements performed in the lab

Optical microscopy

The cell is mounted on a microscope stage (Leitz Laborlux). Digital images are recorded using a CCD camera (Hamamatsu) and software (Hipic). Image analysis software can be used to analyze the structure of complex fluids.

Small angle light scattering (SALS)

A laser source sends light into the cell which is scattered by the flowing system. The scattering patterns are visualized on a translucent screen and recorded with a digital

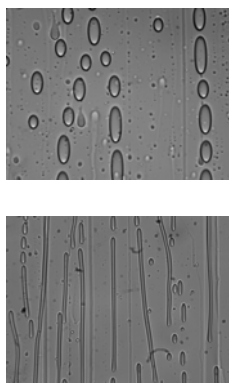


camera (Pulnix) and framegrabber. The digitized images are analyzed using in-house developed SALS-software.

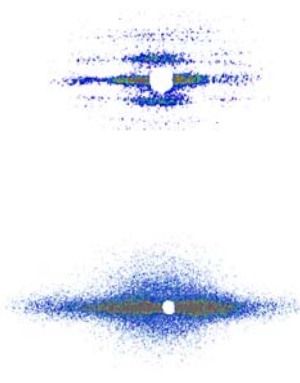
Turbidity, dichroism and birefringence

The cell is part of a specific optical train, depending on the variable to measure. The properties of the incoming laserlight (intensity, polarization) are changed throughout the optical path. A diode and two lock-in amplifiers capture the DC and AC signal of the transmitted light, from which the desired variable is calculated.

Optical Microscopy



SALS



Turbidity

