

Substances are made up of particles *Forces between the particles*

Cohesion and adhesion

Object of the experiment

1. Demonstrating the action of cohesion and adhesion forces in a drop of water

Setup



Apparatus

1 Precision micrometer.....	311 83
1 BMS EcoCam III video and USB camera	MIK74703
1 Beaker Boro 3.3, 25 ml, squat	602 020
1 Droppers, 7 x 150 mm, 10 pcs.....	665 953
1 Rubber bulbs, 10 pcs.....	665 954
1 Stand rod, 25 cm, 12 mm diam.....	300 41
1 Leybold multiclamp.....	301 01
1 Saddle base	300 11
1 Metal plates, set of 5	686 50ET5

Additionally required:

1 Monitor

Observation and measuring example

The drop of water adheres to the two jaws of the micrometer. In the experiment example it can be stretched to a length of up to 4 mm.

Then the drop breaks.

If a detergent is added to the water, the drop breaks as soon as you start to increase the distance between the micrometer jaws.

Evaluation

Attractive forces act between the molecules of a single substance. These forces are called cohesion forces.

Between the molecules of different substances, attractive forces act, which are called adhesion forces.

If the drop of water is placed between the jaws of the micrometer screw, the action of both forces can be observed:

As adhesion forces are acting, the drop of water adheres to the micrometer jaws on both sides.

The cohesion forces hold the drop together while it is stretched.

If the sum of the external forces acting on the drop of water (forces that arise because the distance between the micrometer jaws is increased and the adhesion forces) exceeds the cohesion forces, the drop breaks.

By adding a detergent, the cohesion forces between the water molecules are reduced significantly.

Carrying out the experiment

- Set the distance between the jaws of the micrometer to 1 mm.
- Use the dropper to let a drop of tap water trickle in between the jaws of the micrometer.
- Slowly stretch the drop by turning the jack screw.
- Observe the projected image of the drop.
- Read the distance between the micrometer jaws after the drop of water has broken.
- Repeat the experiment with water to which a detergent has been added.