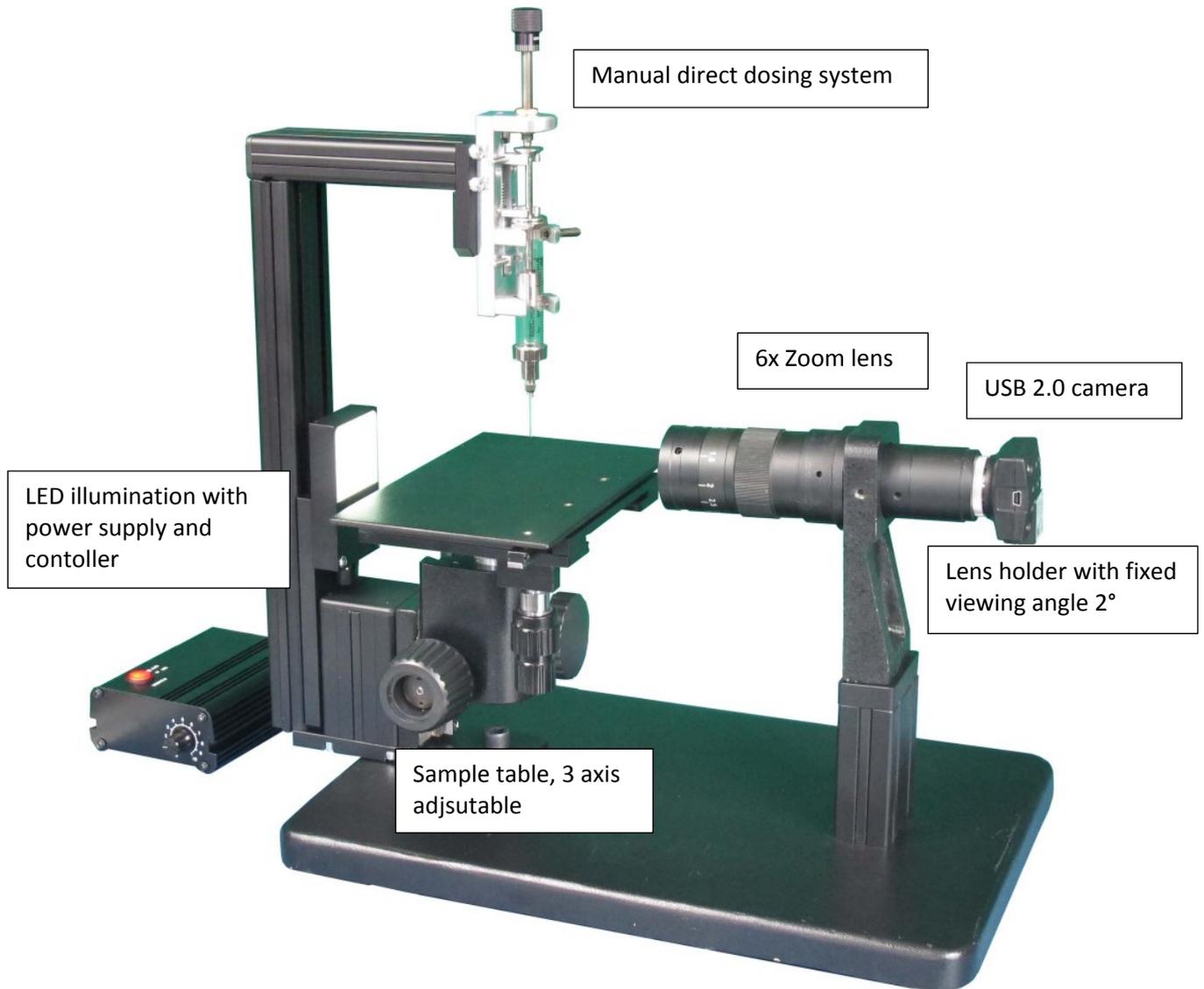# SURFTENS-Basic

Basic equipment for measurement of contact angle, surface free energy (SFE) and surface tension

Setup

Manual direct dosing system

6x Zoom lens

USB 2.0 camera

LED illumination with power supply and contoller

Lens holder with fixed viewing angle 2°

Sample table, 3 axis adjsutable

Technical parameters

Mechanical basic setup
- base plate, size: 380X260X30mm
- holder for dosing system
- lens holder with fixed viewing angle of 2°

Measuring optics with C-mount adapter
- Zoom lens, zoom factor 6,5x
-- Magnification 0,35x...2,25x
-- Object field (12 x 8)mm ....(1,8 x 1,2)mm
-- WD about 100mm

B/W USB 2.0 Camera with USB 2.0 cable
-- 1,3 Megapixel resolution, (1280 x 1024) Pixel
-- up to 25 fps with full resolution
-- up to 100 fps with reduced AOI

LED Light Source, white
-power supply and brightness controller

Specimen table (100 x 200) mm table size
- 40mm travel in vertical direction (z)
- 70 mm travel in x-direction, 30mm travel in y-direction

Manual dosing unit
- smallest drop volume: 0,2µl
- dosing resolution / accuracy: 0,1µl (10ml syringe, 0,5mm needle, water)
- Glass syringe with Luer-lock

Contact angle measuring data
(in connection with SURFTENS measuring software)
-Resolution of contact angle measurement: 0,01°
-Reproducibility of contact angle measurement: +/-0,1° at the live video
(Proof of accuracy is possible only with contact angle standard)
-Accuracy of contact angle measurement: 0,1°

Additional necessarily: PC or Laptop with USB 2.0 interface

SURFTENS - Image processing software for accurate drop analysis

SURFTENS-Basic is equipped with the image processing software SURFTENS which allows precise measurement of contact angle and the calculation of the SFE. Furthermore SURFTENS offers functions like video recording, image storage, image labeling and creating measurement protocols. The videos, recorded with SURFTENS, can be played back and analyzed. All measuring functions of SURFTENS can be applied to the video and to each single picture of the video.

Calculation of Surface free energy SFE
To determine the SFE, a double dosing unit is recommended (manual or motorized).
The drop of the two test liquids (e.g. water and diiodmethane) are applied to the solid and measured. The software calculates from these values the SFE.

Measurement of surface tension
The software module SURFTENS PD enables the measurement of the surface tension of liquids by the pendant drop method and can be used in connection with the SURFTENS-Basic device.

Applications of SURFTENS-Basic
-Characterization of cleaning and coating processes
-Studies on the wettability of surfaces

Measuring methods
-Static contact angle between liquid and solid
-Advancing angle, receding angle
-Calculating the surface free energy (SFE) from the contact angles of up to 5 test liquids
-Measuring the surface tension by the pendant drop method (with SURFTENS PD)
-Acquisition of videos