

Specification of Fully Automatic Spinning Drop Tensiometer

Desirable features:

- The Instrument should be very compact design to allow fast and precise results
- Stage for mounting the measuring cell and precise rotation of the Capillary driven by highly dynamic and vibration free D.C. Motor.
- Software Controlled Rotational Speed of the Capillary
- High precision optics with fast image processing system and permanent LED lighting with adjustable intensity and stroboscopic view angle.
- Easy mountable temperature controlled measuring cell with temperature range from 0°C to 100°C (higher/wider temperature range would be preferable)
- High-performance zoom lens with an integrated continuous fine focus
- Live view system with USB-camera (max. 120 images/s sample rate)
- Motorised and Software controlled inclination of the Tilting Base with the Measuring Cell
- Motorised and Software controlled Camera Position
- Automatic calibration function for correcting optical distortions caused by the capillaries (cylindrical lens effects)
- Temperature controlled Chamber with quick clamp device for holding the Capillary.

Technical specifications:

Interfacial tension measuring range: 1×10^{-6} to 10 mN/m (higher would be preferable)

Rotational-speed range: upto atleast 15,000 rpm (higher would be preferable)

Rotational-speed resolution: ± 0.1 rpm or lower

Optics: continuous fine focus zoom lens and high

Light transmitting capacity of capillary chamber's window

Optical Distortion: $< 0.05\%$

Illumination: LED lighting in the chamber

Image processing system: USB camera, with min resolution of 0.3 megapixels, max. sample rate 120 images/s

Measuring Method:

- Spinning Drop Method

Following Accessories should be offered:

- Measuring cell: Liquid temperature controlled measuring cell with temp. range from 0°C to 100°C (Heating and cooling is through external liquid circulator bath) for mounting onto the Tilting stage.
- Fast exchangeable Glass Capillary compatible with measuring cell chamber
- Capillary Holder and Septum
- Gastight precision syringe – 2 nos.

Windows based Software should be offered as follows :

Windows based software for smooth operation of instrument, compatible to live view capture by USB camera, capable in calculation of interfacial tension based on various methods including statistical evaluation and error analysis.

Optional accessories:

- Calibration Standard Reference capillary to calibrate the absolute image size without the need of rotation
