**TECHNICAL SPEICIFICATION OF CONTACT ANGLE ANNEXURE - C**

**Description:** Upright Motorized optical microscope for reflected light Bright Field, Dark field, polarizing contrast, and Differential interference contrast (DIC) with fine focuses capability of analyzing different types of applications. It should be capable of acquiring multiple images at higher magnification of a large specimen and automatically stitch the images together to give a single image using the software.

**Detailed Specifications Instruments:**

A modular optical tensiometer for fully computer-controlled contact angle, surface and interfacial tension, dynamic contact angle, and surface free energy measurements. The unit must include,

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| ***Technical specifications*** |
| * Optical Tensiometer with large monochromatic LED light, status indicator, light and control electronics
* Digital video high speed camera with zoom option. The camera with the nominal imaging speed $\geq $ 120 fps with a HD resolution, and up to 3000 fps. Includes zoom lens with $>$ 6x magnification and a fine focus. USB3 interface to the computer.
* All-inclusive software for the determination of:
* contact angle by sessile/rising drop method with automatic base line detection.
* surface/ interfacial tension by pendant/ rising drop method.
* contact angle by liquid meniscus method.
* image fitting: polynomial, Basforth-Adams, circular fit, Young-Laplace, including autobaseline algorithm.
* surface free energy based on calculation equations: Zisman, OWRK/ extended Fowkes, Simple Fowkes, Wu, Acid-Base, Equation of State, Schultz 1, Schultz 2
* Wetting and Adhesion Analysis (WAA)
* liquid and solid library with predefined entries (included in software)
* Batch contact angle mode with instant result grid, including multiple samples, measurements points and time points
* Volume from image functionality in the software with adjustable tolerance limits that controls the droplet volume
* Automatic dynamic contact angle mode with the needle method, detecting the advancing, receding contact angle and contact angle hysteresis automatically
* Automatic liquid purity check to verify the quality of the liquids used in contact angle experiments to create more reliable data
* Possibility to enter surface roughness data to software to calculate automatically roughness-corrected contact angles
* Full software is included including all the measurement modes with no additional cost, also software updates are free of cost.
* Instruction manual (in PDF-format on a USB drive)
* Calibration ball
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| XYZ sample stage:* manual precision with at least 80mm X 80mm planar and 10mm vertical movement with fast vertical adjustment.
* sample stage with Positioning prints and removable sample holder clips (2 pcs).
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| Automatic liquid dispenser with Disposable tip dispensing option without any syringes for removing the need of dispenser cleaning:* Automated single dispensing system with disposable pipette of 200 µl volume or more
* Resolutions is at least 0.1µl.

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| Manual syringe: 1 ml volume with continuously adjustable precision syringe  |
| Hooked needle, gauge 22. For measurement when the dispensed liquid is lighter than the liquid in cuvette. |
| Quartz Cuvette: 1 optical quality |
| Warranty: 2 Years |