

Operation of Goniometer (Contact Angle & Surface Tension Measurement)



Coral name:GoniometerModel:Firsttenangstroms (FTA32)Location:Nanofab, Building 215, Metrology BayContact:Lei Chen (x2908)Alternate contact:Gerard Henein (x5645)

OVERVIEW:

The Firsttenangstroms (FTA32) goniometer provides video-based contact angle and surface tension measurements. Contact angles are measured by fitting a mathematical expression to the shape of the liquid drop and then calculating the slope of the tangent to the liquid drop at the liquid-solid-vapor (LSV) interface line. Computer software liquid drop shape analysis gives the contact angle without operator intervention or judgment.

APPLICATIONS:

Contact angle and surface tension for adhesion, cleanliness, wetting, biocompatibility.

SPECIAL NOTES OR RESTRICTIONS:

- Must be trained and qualified to use the tool.
- Any new liquid other than water must be approved by Nanofab staff.

SAFETY PRECAUTIONS:

- Never touch the lens on the camera
- Handle samples on the stage with gloves and/or tweezers.
- Report any malfunction of the tool to the Nanofab staff.

Operation

- Remove the cover on the lens.
- Turn "ON" the computer if it is "OFF".
- Double click the "FTA32" icon on the desktop to start the operation.
- Click "OK" to enter the program

😸 User Log-On and Project Files 🛛 📃 🔀									
Owner:	Owner: NIST 125								
License Number:	1607968								
User:	coalmon								
Configuration Data 🗾	C:\Program Files\Fta32\Default.mdb								
	Open	Save As	Copy As	Delete					
Show Additional Options OK Cancel									
Data Reporting ✓ dynes/cm as IFT Units ✓ mN/m as IFT Units ✓ mJ/m2 as IFT Units	I Tab as Text I I Comma as Te I Compress M	Delimiter ext Delimiter ovie Disk Files	 Report all Errors to User Ask to Save Movies Autolog Movie Data to File Output XML Data File 						
Camera and Frame Grabber									
▼ Enable Camera V2: RS170 (North American NTSC standard, 60Hz) camera ▼									
Flip Image FG4: MuTech	FG4: MuTech MV-510 frame grabber								
Computer Controlled Hardware									
✓ Enable Control H3: FTA100 series with RS232 control of external devices									
Com Port 3 for									
Com Port 3 for	Com Port 3 for FTA								
Check Hardware Options Present									
Quad Kloch	Guad Kloehn Pump								
Peristaltic P	Peristaltic Pump								
Clear Options									
Config File Password									
No password set. Enter desired password and then click New PW to save.									
New PW Password:									



- Choose test fluid and place in syringe. Water is used in most cases because it is safe and forms a high, easily observed, contact angle on most materials. For other liquids, please consult contact engineer for feasibility.
- Lock the syringe in the house tightly.

- Click "Video" to show the image (see below).
- Lower the needle to the view window and adjust the focus until clear.



- Load the sample on the holder and adjust the stage height to bring it into the view window.
- Adjust the light and focus on the drop until clear and then click the "Snap Shot"

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r	Images Contact /	Angle	Interfacial Tension	Calibration	Tools
Dynamic IFT Surface Energy Graph Movie	Images Contact / Analysis Type Sessile Drop Profile Protractor (manual mode only) Capillary Rise Top View Top View Drop Orientation Upside Down Drop Complement Angle Bright Drop on Dark Background Camera angle (deg): 0.00	Ingle Liquid-V Sph Non Left Righ Lapl Auto Wes Uquid-S T Righ Auto Use F Reft Use F Reft Stor Corr Sav	Interfacial Tension appor Curve Fit spherical Fit spherical Fit side Only ace-Young Fit choice Fit age on Curve Fit Failure colid Curve (Baseline) Fit Horizon ection Image Present Touchoff Reflection Sets Baselir ense Tip in Drop g Baseline (not horizontal) e Baseline Width Previous Baseline ect for Curved Baseline et his Curve as Baseline g Plate Experiment	ne	Tools

- Define the contact angle analysis based on your need in the above window
- Click "Contact Angle" to calculate the data (see below)



• Export the image from file menu and save it to the user folder.

- Raise the syringe back to the normal position.
- Remove any liquid other than water from syringe.
- Close the software.
- Cover the camera lens.
- Leave the computer ON

For any further data analysis information please check the User Manual next to the tool.