

# SDC-200S Technical specifications

R&D type contact angle measuring instrument



## Contents

1 · Summary.....	3
2 · Application.....	3
3 · Principle.....	5
4 · Specifications.....	6
5 · Accord with national standard.....	9
6 · Product features.....	10
7 · Optional Accessories.....	13
8 · Company introduction.....	14
9 · After-sales service.....	15
10 · Customers.....	16

## 1 · Summary

Contact angle refers to the tangent at the gas-liquid interface at the three-phase intersection of gas, liquid and solid. This tangent is at the angle  $\theta$  between the liquid side and the solid-liquid boundary line. Contact angle measurement is currently the main method for surface performance testing.

SDC-100 standard contact angle measuring instrument is based on the principle of optical imaging, and measures the surface contact angle, wetting performance, surface tension, surface energy and other properties of the sample through image contour analysis. The equipment uses a full-automatic liquid feeding device, which is cost-effective, highly expandable, and fully functional, and can meet various conventional measurement needs. It has been widely used in many colleges and universities and enterprises.

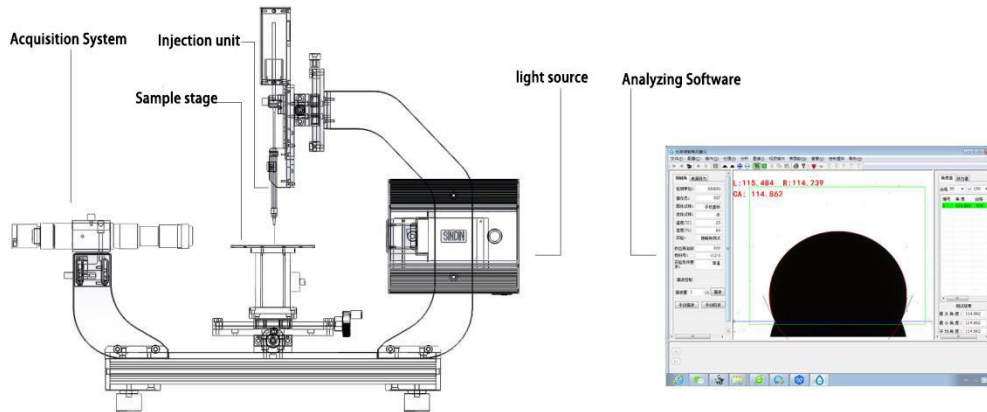
## 2 · Application

Contact angle measuring instruments are widely used in various industries and fields. In the fields of mobile phone manufacturing, glass manufacturing, surface treatment, materials research, chemical engineering, semiconductor manufacturing, coatings and inks, electronic circuits, textile fibers, medical biology and other fields, contact angle measurement has become an important instrument for evaluating surface performance.

(Some test functions require special accessories to complete)

1. Wetting behavior of liquid on the solid surface, such as spreading, permeation, absorption, etc., and static contact angle measurement by Sessile drop method;
2. Measurement of material's advancing angle, receding angle, contact angle lag, rolling angle, dynamic contact angle on solid surface;
3. Continuous real-time research and process recording of materials, Curve analysis of contact angle over time;
4. Contact angle measurement of various special materials, such as powder, curved surface, superhydrophobic / superhydrophilic samples;
5. Adhesive drop method for testing contact angle of materials immersed in liquid;
6. Measurement of interfacial tension, polarity, and dispersion components of various liquids by the hanging drop method;
7. Calculate Surface Free Energy of Solids and Analysis of Polar Dispersion Component;
8. Analyze the Adhesion of the liquid on the solid surface, and evaluate the uniformity and cleanliness of the solid surface.

## 3 · Principle



As shown above, the contact angle measuring instrument is mainly composed of five parts: light source, injection unit, sample stage, acquisition system, and analysis software. The device uses the principle of optical imaging.

**Light source adopts dense LED cold light design, uniform light emission, image cleaning, long life;**

The injection unit uses a high-precision syringe pump to feed the liquid, which is controlled by the software quantitative constant speed. The drip is stable and the accuracy is as high as 0.01 microliters.;

The sample stage adopts a three-dimensional manual fine adjustment platform, which is flexible in operation and accurate in positioning. The sample stage can be customized according to the actual sample size;

The acquisition system adopts imported monochrome CCD camera, with stable shooting, clear images, real and reliable. The lens adopts German industrial grade imported configuration, 0.7-4.5 times magnification adjustable, no distortion of

imaging;

The analysis software is powerful, with one-button full-automatic fitting capability, and has the world's leading fitting method to meet the precise fitting of various droplet shapes;

#### 4 · Specifications

Equipment	
Dimension	800mm (L) *190mm(W)* 640mm(H)
Weight	21KG
Power	220V / 60HZ
Light source system	
light source	Dense LED adjustable blue tone industrial grade cold light source
life	Service life of over 25,000 hours
Injection unit	
injector	Dedicated matching high-precision quartz syringe, 500 $\mu$ L capacity
Dropping liquid	Software controlled automatic dripping with accuracy up to 0.01 $\mu$ L
Injection unit moves	50mm up and down; 50mm left and right
Acquisition system	

CCD	SONY original imported high-speed industrial chip, 25 frames / S, 130W pixels
Camera lens	0.7-4.5 times HD industrial grade continuous zoom microscope
Acquisition system regulation	60mm front and back (3mm fine-tune) 、adjustable angle of view (360 ° rotation, etc.)
<b>Sample stage</b>	
Working stage size	160mm*200mm
Maximum sample size	6 inch
Sample table movement	Forward and backward movement/Manual, stroke 60mm, accuracy 0.1mm  Left and right movement/Manual, stroke 35mm, accuracy 0.1mm  Up and down movement/Manual, stroke 80mm, accuracy 0.1mm
<b>Analyzing Software</b>	
Contact angle measurement range	0-180°
Contact angle measurement	±0.1°

accuracy	
Timing measurement	One-click timing snap measurement for hydrophilic samples, freely set time
Contact angle analysis data	Bilateral contact angle; average contact angle; Standard judgment of qualified data
Surface tension test method	Automatic real-time fitting (dynamic surface tension)
Surface tension test range	0-2000mN/m
Surface tension measurement accuracy	0.01 mN/m
Analysis software functions	China's most advanced contact angle measurement and analysis software automatic fitting method (one-click automatic fitting, there is no artificial error) includes: Circle method, Ellipse/Oblique ellipse, Young-lapalace, Differential circle / Differential ellipse;
Surface free energy	Zisman, OWRK, WU, WU 2, Fowkes, Antonow, Berthelot, EOS, adhesion, Soaking, Spreading factor
Dynamic contact angle fitting	Batch screenshot fitting, video continuous automatic fitting, automatic online real-time fitting



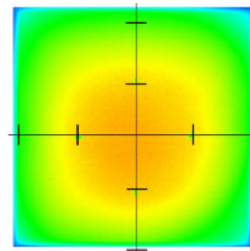
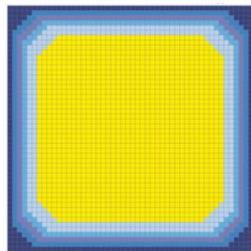
Surface / Interfacial Tension Test	Pendant drop method (can be real-time fully automatic dynamic surface tension test)
Test droplet status	Pendant Drop、Sessile Drop (2/3) 、Captive bubble method、Sessile drop method
Software communication access	The software is equipped with a communication interface to support the MES upload function.
Extensions functions	Multi-group liquid injection extension, electric / magnetic field working platform, high and low temperature working platform, XYZ automatic platform, rotating platform, overall tilting stand

## 5 · Accord with national standard

- 1.GB/T 24368-2009(Detection of hydrophobic contaminants on glass surfaces);
- 2.SY/T5153-2007 (Determination of wettability of reservoir rock) ;
- 3.ASTM D 724-99 (2003) (Test method for surface wettability of paper) ;
- 4.ASTM D5946-2004 (Measurement of contact angle of plastic film with water) ;
- 5.ISO15989 (Measurement of water contact angle of plastic film and sheet corona treated film) ;

## 6 · Product features

1. The mainframe adopts high-strength aviation aluminum alloy structure with modular design concept, self-developed integrated chip circuit control, and adopts the design essence and configuration of the world's top imported contact angle equipment to ensure the instrument has extremely strong stability;
2. Adopts industrial-grade dense adjustable LED cold light source system (life time above 25000H) to ensure clearer imaging and avoid evaporation of small droplets caused by extra heat;



3. Using high-performance industrial movement imported from Japan and industrial-grade continuous zoom microscope to ensure the authenticity of the image and obtain the best imaging effect;



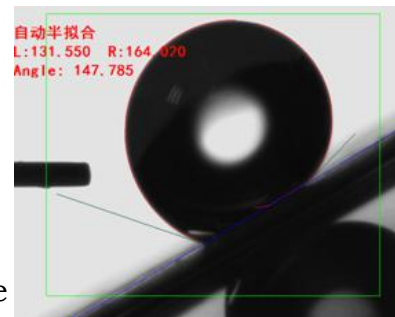
4. Adopt USB2.0 standard interface, fast data transmission speed, high compatibility, strong imaging stability;
5. **China's first company to provide contact angle measurement calibration**

samples imported from Germany to ensure the accuracy of the instrument.

Angle calibration standards are  $3^\circ$   $5^\circ$   $8^\circ$  ;  $60^\circ$   $90^\circ$   $120^\circ$  ;  
 $115^\circ$  (optional);

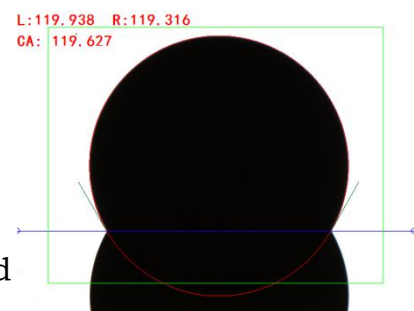
6. The design of the acquisition system is flexible, suitable for most measurement environments, and simple to deal with a variety of complex surface measurements;

7. Possess the world's most advanced contact angle analysis method to meet the exact fitting of all kinds of droplet imaging, including our unique differential ellipse and differential circle special liquid imaging fitting method;

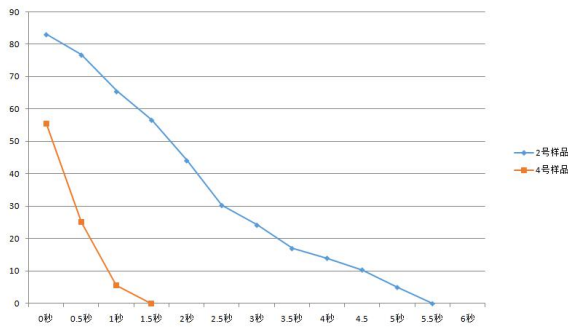


8. Adopting international leading calculation methods, the software has realized fully automatic fitting to avoid errors caused by human operation;

9. Equipped with a fast fitting function for bilateral contact angle measurement, more comprehensive analysis of the surface and wetting performance of liquids and solids, and more accurate analysis of the actual wetting of the surface;



10. Dynamic shooting, video fast test data, can continuously record the change of test contact angle, and then the software batch fitting automatically; ;
11. The software automatically generates reports, which include various data reports such as Word format, Excel format, and spectrum format;



12. With a variety of optional functions, our company has a strong R & D team to meet various custom measurement requirements put forward by customers;

## 7 • Optional Accessories

		
Film fixture	Reflectance standards	Sample Cell
		
Hydrophobic treatment solution	Quantitative injection pump	Temperature control platform
		
Vacuum platform	Electrostatic fan	Manual tilt platform
		
Micro syringe pump	Injection needle syringe	Speed Camera

## 8 · Company introduction

Shengding Precision Instrument is located in Chang'an Town, Dongguan City, and has been committed to the overall solution of surface performance treatment and testing. Our company is a national high-tech enterprise and has obtained more than 20 patented technologies for contact angle measurement. We have jointly established a joint laboratory of production, teaching and research with South China University of technology, and a comprehensive laboratory of surface performance treatment and testing.

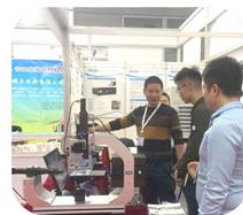
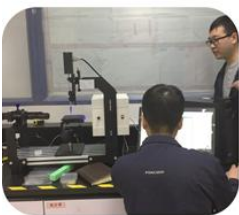
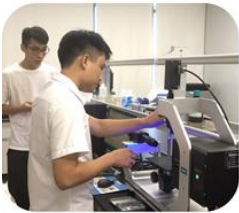
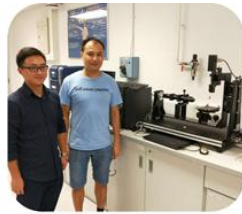
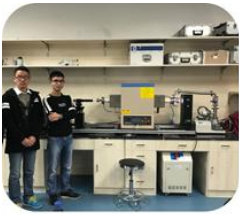




## 9 · After-sales service

1. Standard model, fast delivery;
2. Two-year global warranty for the entire instrument;
3. Provide free pre-sale experiment(test) service;
4. Global Instrument Software Free Lifetime Online Upgrade;
5. Instrument lifetime assistance in calibration and maintenance services;

## 10 · Customers



## List of some customers » » »

(Enterprise)	(Enterprise)	(University)
富士康	比亚迪电子	天津工业大学
京东方	光宝电子	浙江大学
华为	劲胜智能	北京理工大学
vivo	信利光电	北京装甲兵工程学院
OPPO	蓝思科技	南开大学
三星	天宝光电	天津大学
伯恩光学	欧菲光	华南师范大学
华清光学	中车集团	华南理工大学
龙旗电子	天马微电子	西南科技大学
深圳柔宇显示	广东星弛光电	北京科技大学
深圳永德利	格力电器	北京航空航天大学
普耐光电	三菱重工海尔	哈尔滨工业大学
新辉开科技	歌尔股份	青岛理工大学
南京诺旭微光电	江苏菲沃泰	浙江工业大学
蒂造自动化	武汉柔显科技	渭南师范大学
固安翌光	深圳斯迈得半导体	北京装甲兵工程学院
亿濠精密	E.V.I.GmbH.	云南理工大学



# Minder Hightech

新亚电子	深圳市信濠光电	昆明理工大学
成都光明光学	易佰特新能源	河南工业大学
科立视材料	长沙乐远	河南科技大学
苏州宇宏光电仪器	和旭光电	合肥工业大学
水晶光电	利亚德光电	安徽理工大学
惠州市蓝微电子	上海道助电子	江苏科技大学
中山联合光电	PT SAT NUSAPERSADA TBK	广东药科大学
中国南玻集团	品胜电子	深圳大学
江西省亚华电子	青岛富堡精密	东莞理工大学
上海广玖电子	新宇腾跃电子	重庆大学
深圳市奥特姆自动化	东莞市奇声电子	大连理工大学
长虹	江门佳泰	广西大学
永州市福星电子	吉瑞光电	桂林理工大学
深圳市戈比太	贝肯智能	河北工业大学
魅族	蓝钻光学	青岛农业大学
深圳润宜科技	提姆光电	山东科技大学
广东海特	国盈光电	四川大学
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闻泰通讯	珮泰科技	武汉大学
瑞必达	昆山恒准	西安交通大学
努比亚	源胜光学	西北工业大学
福瑞达	银宝山新	上海工业大学
中山欣铝	冠成光电	集美大学
伟亚光电	泽浩腾	上海交通大学
四川久润	金恩光电	东华大学
天美科学	信如塑料	华中科技大学
温施德	深圳福瑞达	华北电力大学
TCL 移动	嘉一科技	广东石油化工学院
光宏光电	温州世茂	西安理工大学
三和生物	南京诺旭微光电	南京大学
潮州三环	常州我信光学	上海海洋大学
深圳亚美斯通	奥音科技	南京工业大学
广东德美精细化工	厦门精益科检测	上海同济大学
悦步医疗器械	东莞瑞盟涂料	上海农业大学

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唐山双瑞	中山上田	江苏大学
广州立图	深圳市固得刻	汕头大学
东莞鼎麓电子	深圳天深达	香港理工大学
湖南澳维	苏州益罗	中山大学
东莞市长安义泽	北京北方华创	大理大学
寿光新海能源	深圳铭宇	广东石油化工学院
广东聚合科技	深圳神立光学	南方科技大学
深圳鸿爱斯	深超光电	中国农业科学院
深圳天珑	龙贸国际	西安微电子研究所
苏州南大光电	深圳鹏鑫浩宇	地质大学（武汉）
无锡荣坚	惠州海格科技	云南大学
安阳全丰生物	常州昂星新材料	汕头大学
苏州日东迈特	亿天净化	河南理工大学
苏州奥普斯	江苏优视	安阳工学院
普乐新能源	江苏春戈	新乡科技学院
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