

Used in many applications

Medical Technology

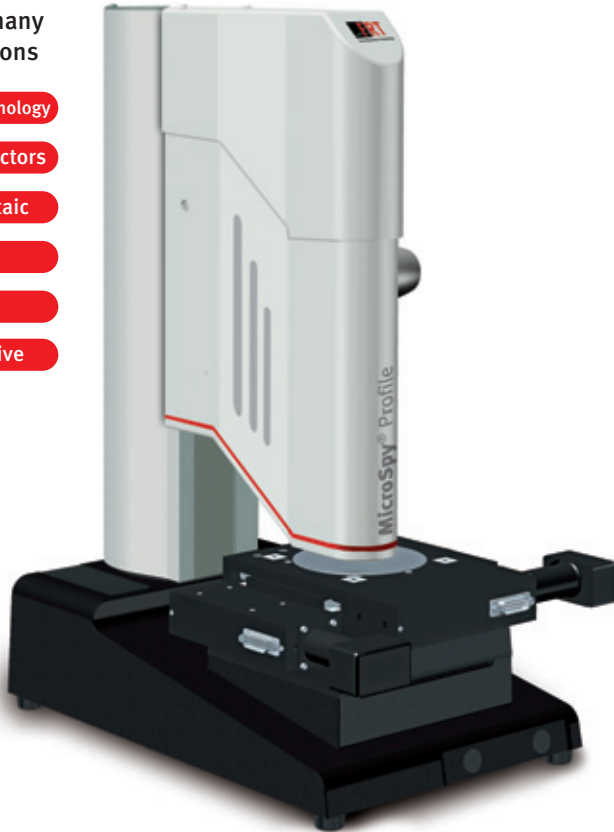
Semiconductors

Photovoltaic

MEMS

Optics

Automotive



Single-sensor profilometer for the budget-friendly entry into non-contact 2D and 3D surface metrology

Application Versatility

- For surfaces from smooth to very rough, absorbing to reflective or transparent
- Powerful and long-lasting LED light source
- Resolution down to the nanometer
- Low maintenance as there are no moving parts in the sensor
- Sensors with different measuring ranges available

Fast and Intuitive Operation

- Integrated CCD-camera
- Live camera picture of measuring area in acquisition software
- Selection of measuring area with mouse
- Easy to use evaluation software FRT Mark III
- Various functions for visualization, analysis and reporting

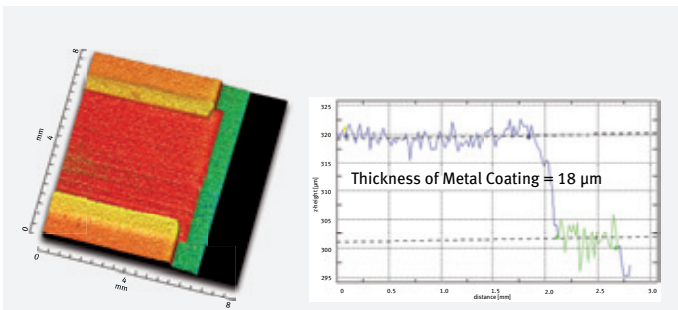
Powerful Hardware

- Fast, non-contact measurement
- Motorized x-y measuring area 50 mm x 50 mm
- Manual sensor approach through precise z-axis
- Depending on selected sensor, height measuring ranges from 300 µm to 3 mm and a maximal vertical resolution of 3 nm are available

Cost-effective Investment

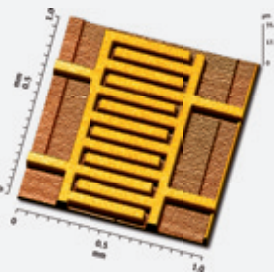
The FRT MicroSpy® Profile is designed to be cost-effective and powerful at the same time.

- Attractive purchase price
- Low follow-up costs for training, service and spare parts
- Small footprint



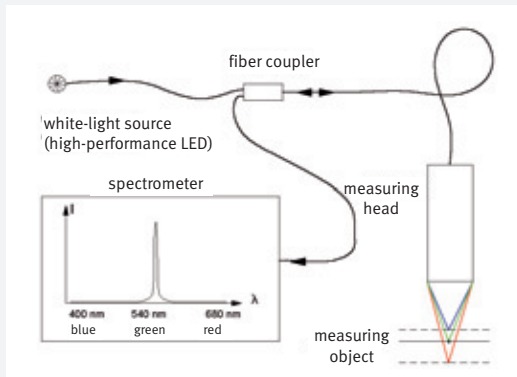
Backside metallization of a solar cell
Left: 3D topography, right: 2D profile of metallization

Wafer	Ra / µm (polished side)	Ra / µm (rough side)
1	0,037	0,484
2	0,049	0,460
3	0,033	0,390
4	0,056	0,408
5	0,039	0,408
6	0,033	0,408
7	0,030	0,394
8	0,046	0,404
9	0,029	0,365
10	0,044	0,371



Left: Roughness evaluation according to DIN ISO
Right: 3D topography of a MEMS structure

Measuring Principle



The MicroSpy® Profile uses the principle of chromatic distance measurement.

White-light is focused on the surface by a measuring head with a strongly wavelength-dependent focal length. The spectrum of the light scattered on the surface generates a peak in the spectrometer.

The wavelength of this peak is used to determine the height on the sample. The measuring tool handles transparent, highly reflective or even light absorbing surfaces and materials.

Measuring System

Measuring Principle	chromatic confocal point measurement
System Design	microscope stand with x-y stage, chromatic sensor, CCD-camera
Sample Positioning	motorized precision stage, travel range 50 mm x 50 mm (x,y)
Sensor Approach	manual axis with coarse and fine adjustment, travel range 80 mm
Footprint (cm)	58 x 25 x 40 (h,w,d)
Weight Measuring System (kg)	20
Power Supply	100-240V, 50-60 Hz, 220 W

Sensors ¹	300 µm	600 µm	3 mm
Working Distance (mm)	4.5	6.5	20
Resolution z (nm) ²	3	6	30
Resolution x,y (µm)	1-2	1-2	5-6
Measuring Angle (°) ³	approx. 90° ± 30°	approx. 90° ± 30°	approx. 90° ± 30°

¹ Height measuring range, scope of delivery contains one sensor of choice

² Maximum resolution based on reduced measuring range

³ Diffusive surfaces allow for wider measuring angles

Software Package

Data Acquisition (FRT Acquire)	easy to use, live camera picture from sample surface
Data Analysis (FRT Mark III) ⁴	analysis of profile, topography, roughness, step height as well as many 2D and 3D filter and evaluation functions
Reporting	customizable reports, customizable input fields for adding additional information from user input
Languages	German/English

⁴ Export file formats:
ASCII, Autocad DXF, CSV, BMP, JPG, PNG, TIF

Find out more:

<http://www.frt-gmbh.com/profile>

EUROPE FRT, Fries Research & Technology GmbH, Tel.: +49 (0)2204-84 2430, Fax +49 (0)2204-84 2431, Email: info@frt-gmbh.com
 ASIA/PACIFIC FRT Shanghai Co., Ltd., Tel.: +86 (0)21-5138-6260, Fax: +86 (0)21-5138-6280, Email: info@frt-china.cn
 AMERICA FRT of America, LLC, Tel.: +1 408-261-2632, Fax +1 408-261-1173, Email: info@frtofamerica.com

Copyright © 1995-2009 FRT GmbH. All rights reserved. FRT, the art of metrology, MicroGlider, MicroProf and MicroSpy are property of FRT GmbH. All other trademarks are the property of their respective owners. FRT reserves the right to change product offerings or specifications.