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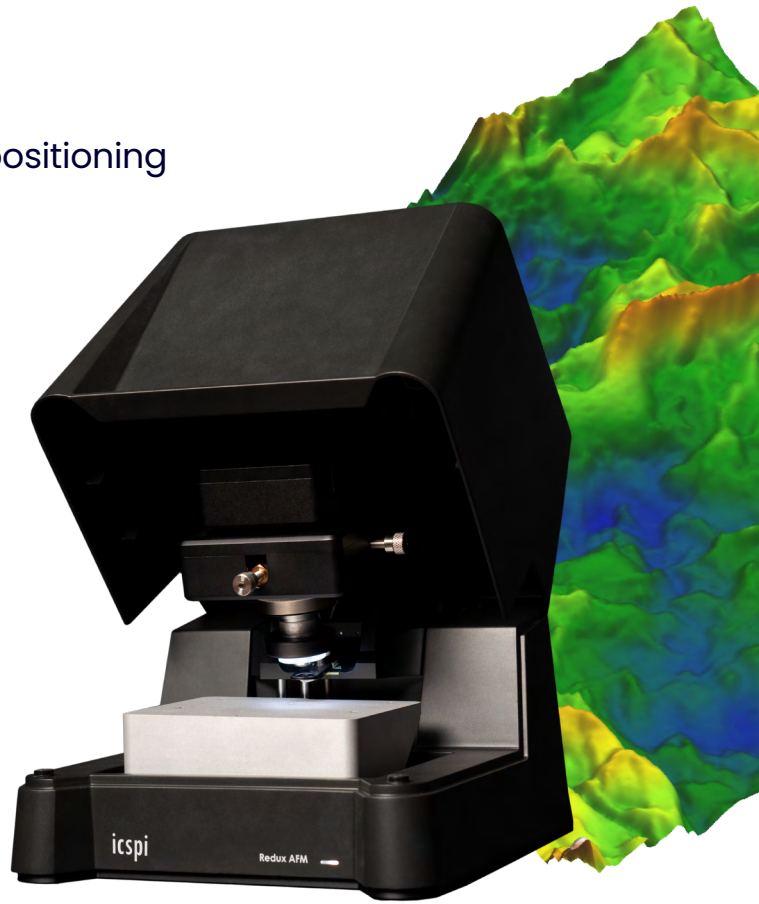
REDUX AFM

Effortless nanoscale imaging

- Fastest time-to-data for benchtop AFM
- Automatic config, approach & scanning
- Motorized XY and Z stages for easy sample positioning
- Integrated optical microscope
- Easy-to-use, durable AFM chip



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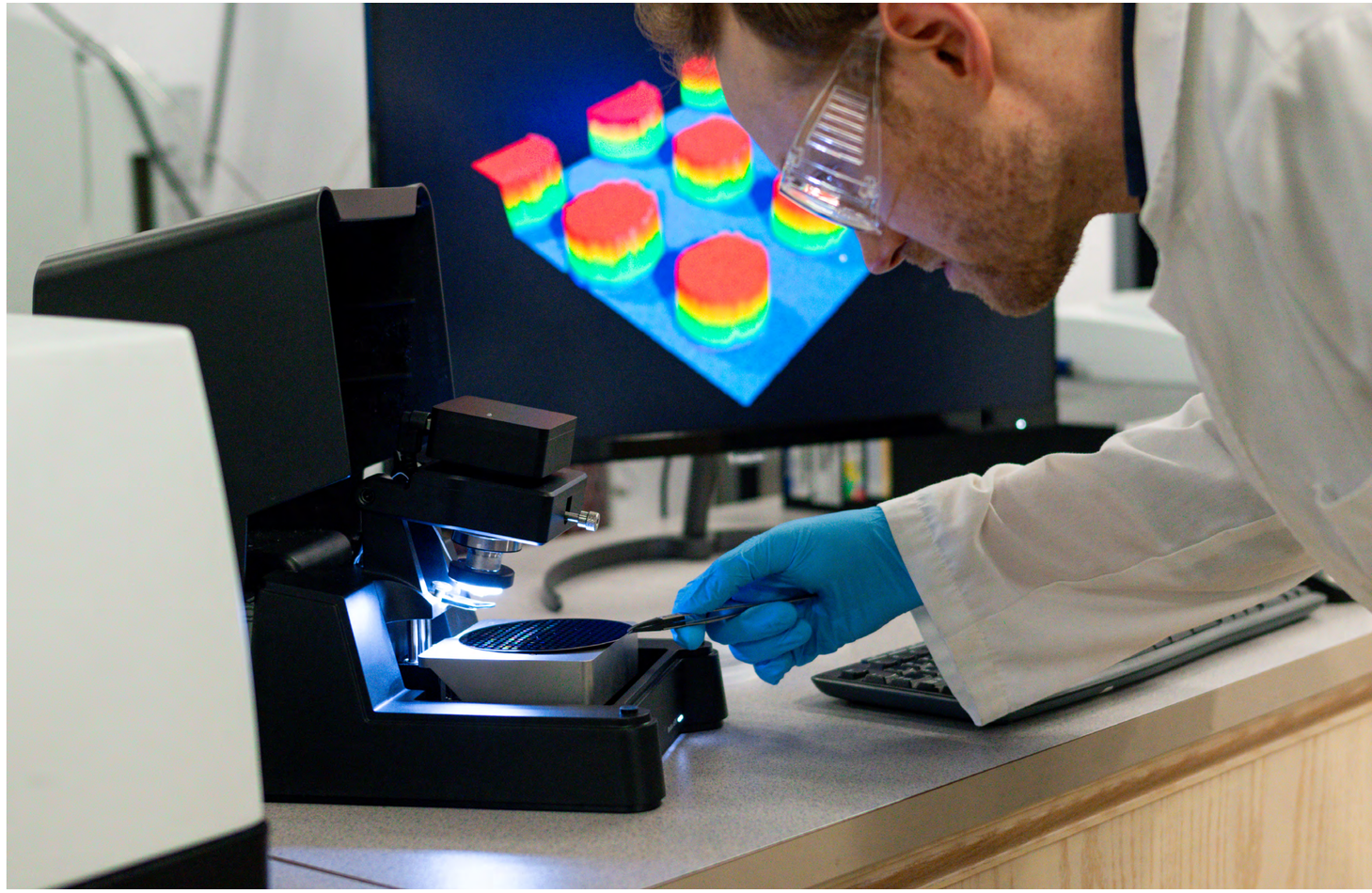
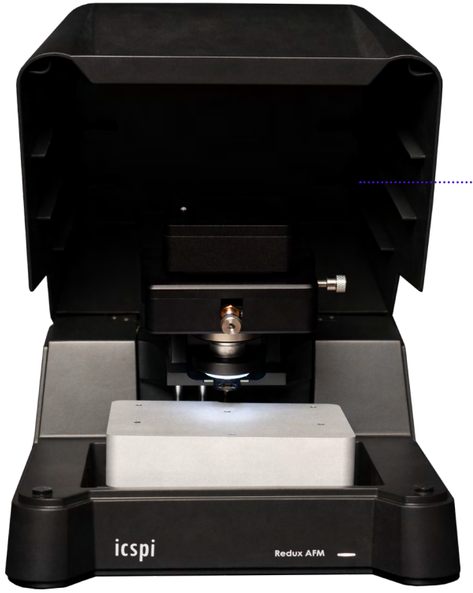
OUR MISSION

ICSPI is on a mission to expand access to nanoscale measurement with powerful, automated and intuitive imaging tools.



What we do

ICSPI designs and manufactures fast, powerful and easy-to-use atomic force microscope systems for research, education and quality control.



REDUX AFM

Fast
3 minute time-to-data

Easy-to-use
Scans in 3 clicks

Scan exactly where you need
Motorized XY and Z stages

Our Story

ICSPI was founded in 2007 with the goal of bringing fast, powerful, and easy-to-use nanoscale metrology to everyone. Frustrated by the poor versatility, complexity and slow speeds of traditional instruments, ICSPI has reset the expectations for nanoscale imaging with intuitive AFM systems.

About the Redux AFM

Effortlessly collect 3D topography data with sub-nanometer precision on your benchtop with the Redux AFM. Get quantitative data in minutes for topography, roughness, film thickness, particle size and more.

- Collect 3D images at the nanoscale in minutes
- Effortless set-up: laser alignment-free system
- One-click automatic approach in seconds
- No more silicon tip exchanges: durable, easy-to-use AFM chips

REDUX AFM

A higher level of automation

- Automatic config, approach and scanning
- Motorized XY and Z stages
- Integrated optical microscope
- Environmental cover
- Easy-to-use AFM chip

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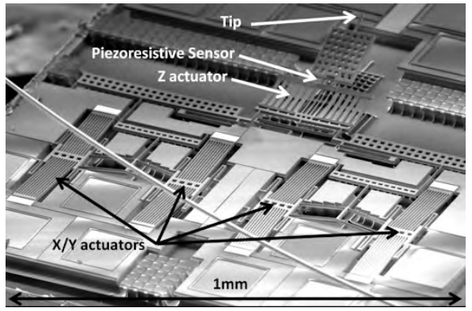
AFM-on-a-chip Technology

AFM-on-a-Chip

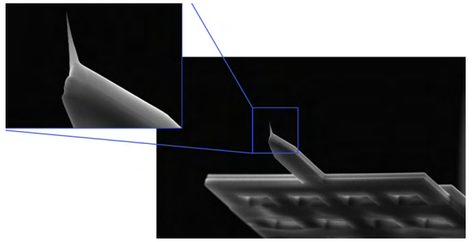
The Redux AFM is powered by ICSPI's AFM-on-a-chip technology, which makes AFM fast, intuitive and low-maintenance. Precise XYZ scanners and positioning sensors are integrated onto a single 1 mm^2 chip.

AFM-on-a-chip uses an integrated piezoresistive sensor that allows for laser alignment-free operation and a fully automatic, one-click approach from the tip to the sample.

Our AFM chips are manufactured with state-of-the-art micro-electro-mechanical systems (MEMS) technology that makes the Redux fast, easy-to-use and work like magic.



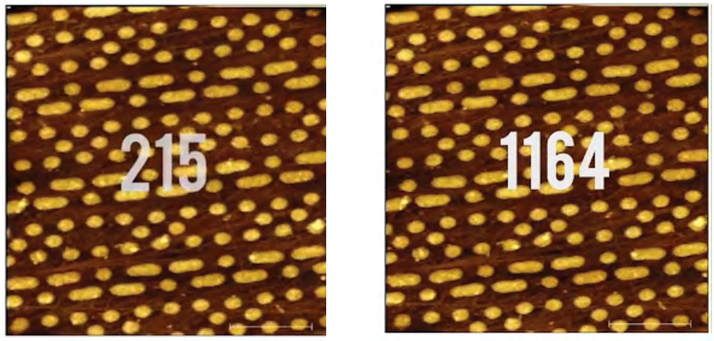
Scanning electron microscopy (SEM) image of an AFM-on-a-chip device



SEM images of a diamond-like carbon probe on the end of a cantilever

Long Lifetime AFM Tips

ICSPI AFM tips are made of durable materials like diamond-like carbon and aluminum oxide. Combined with the unique, compliant AFM-on-a-chip mechanism and cantilever, lifetime of 1000+ scans without noticeable wear is possible.



AFM topography scans of an Intel microchip (copper on slicion dixiode). Number indicates scan number as part of a time lapse of scans. Image quality (lateral resolution) does not degrade after over 1000 scans.

Redux AFM Specifications

Scanning

Scan types	Topography, Phase
Max scan size	20 µm × 20 µm
Min scan size	300 nm × 300 nm
Vertical scan range	20 µm
Noise floor	<0.5 nm rms

Resolution and Speed

Quick scan (128 px)	16 sec
Routine scan (256 px)	80 sec
High-resolution scan (512 px)	5 min
Max resolution	1024 × 1024 pixels

Samples

Sample platform area	125 mm × 95 mm
Max sample height	20 mm
Max sample weight	250 g

Motorized XY Stage

Sample positioning range (XY)	12 mm × 12 mm

Integrated Optical Microscope

Objective	10x, 0.25 NA
Field of view	1.4 mm × 0.8 mm
Resolution	1920 × 1080 FHD Video output
Sample illumination	Integrated LED Lighting

System Dimensions and Weight

Dimensions (L x W x H)	23.2 cm × 22.0 cm × 24.6 cm
Weight	4 kg

Software and I/O

Communication	USB
Operating system	Windows 10, 11
Data output	gsf, tsv, png

Power

Power supply	Class II (two prong)
Input	100-240 VAC ~ 50/60 Hz
Output	12 VDC, 3 A

Comparison

	Redux AFM	Traditional AFM	SEM
Operation in air	✓	✓	X
Automatic approach	✓	X	N/A
Install time	5 min	1–2 weeks	1–2 weeks
Time to data	3 min	1 hour	30 min–1 hour
Cost	$	$ $ $	$ $ $ $
Cost per scan	$	$ $	$ $
Benchtop operation	✓	X	X
Training time	1 hr	12+ hrs	12+ hrs
Laser alignment-free	✓	X	X
Regular power and USB	✓	X	X
Easy-to-handle chips	✓	X	N/A
Low maintenance	✓	X	X
3D images	✓	✓	X
Sub-nanometer resolution	✓	✓	X
Non-conductive samples	✓	✓	X

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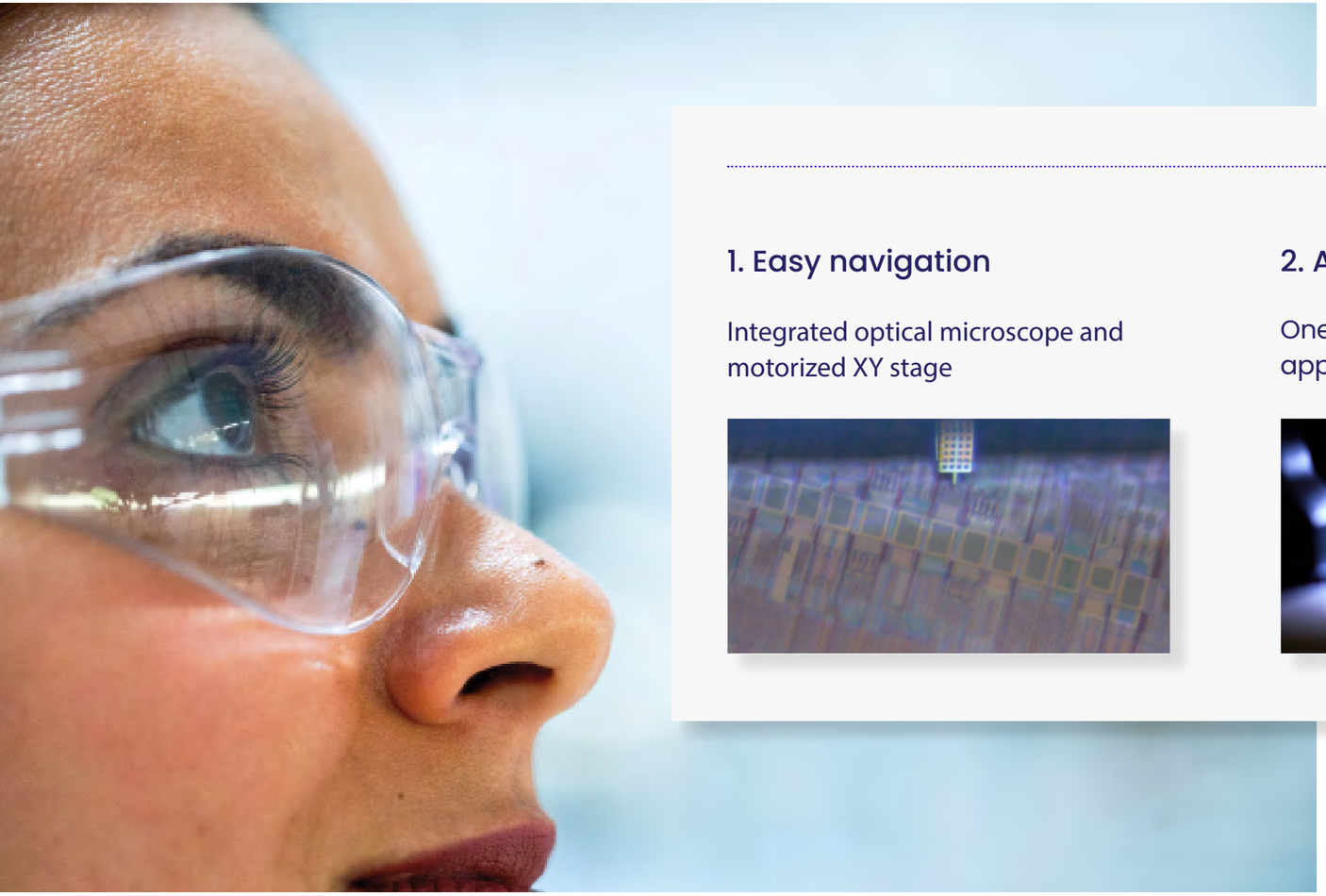
大阪大学 OSAKA UNIVERSITY



3D nanoscale scans in 3 steps

1. Easy navigation

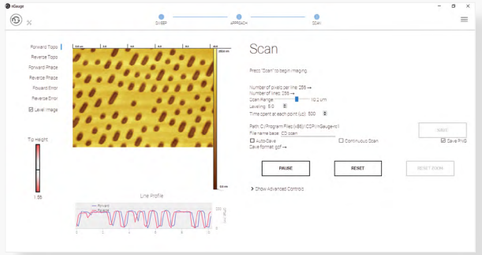
Integrated optical microscope and motorized XY stage

2. Automatic approach

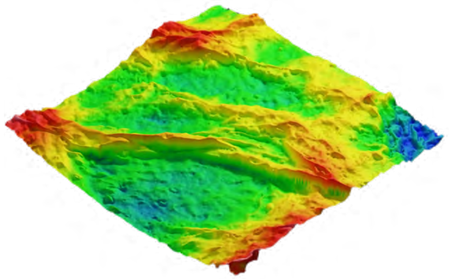
One-click automatic tip-sample approach completes in ten seconds

3. Fast scanning

Capture routine scans in just over a minute

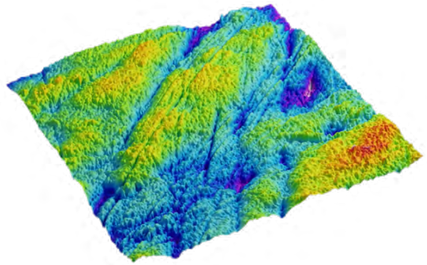


Capabilities



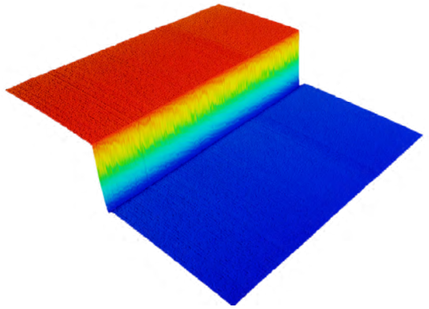
Topopgrahy

Collect rich, quantitative data in 3D with high resolution



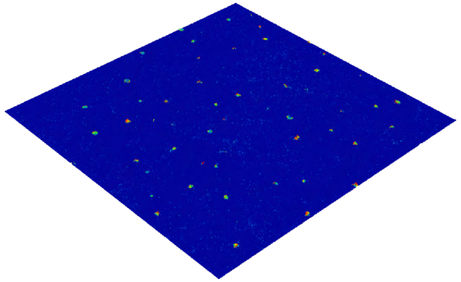
Roughness

Go beyond line profiles and Ra: get quantitative data across an area in 3D



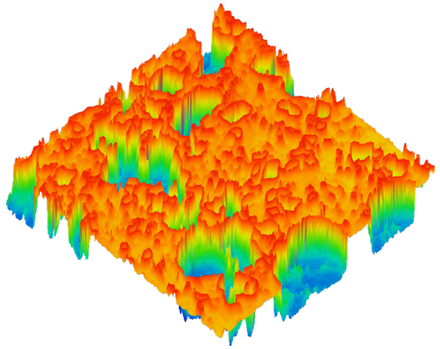
Thickness

Accurately measure film thickness and step height



Particles

Determine particle size, shape and distribution



Phase imaging

Discover the spatial distribution of components in your materials

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