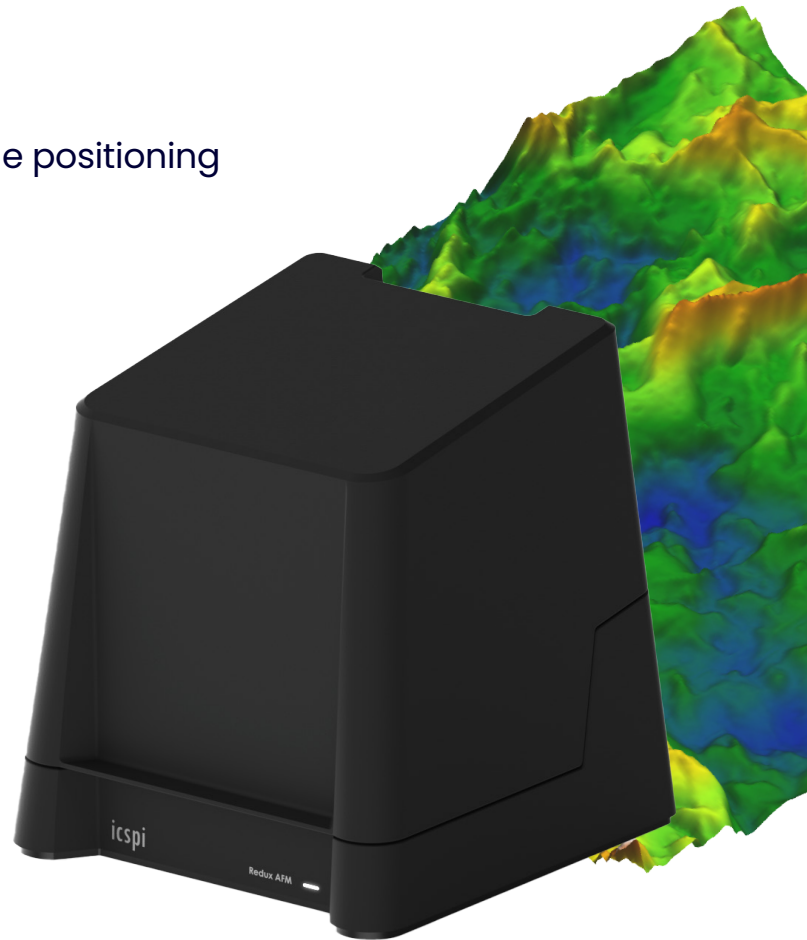


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REDUX AFM

# Motorized AFM on your benchtop

- 2 minute time-to-data
- Automatic sweep, approach & scanning
- Motorized XY and Z stages for easy sample positioning
- Integrated optical microscope
- Easy-to-use tip cartridge with TipGuard



[icspicorp.com](http://icspicorp.com)

[sales@icspicorp.com](mailto:sales@icspicorp.com)

OUR MISSION

ICSPI is on a mission to bring fast, powerful, and easy-to-use nanoscale imaging tools to your benchtop.

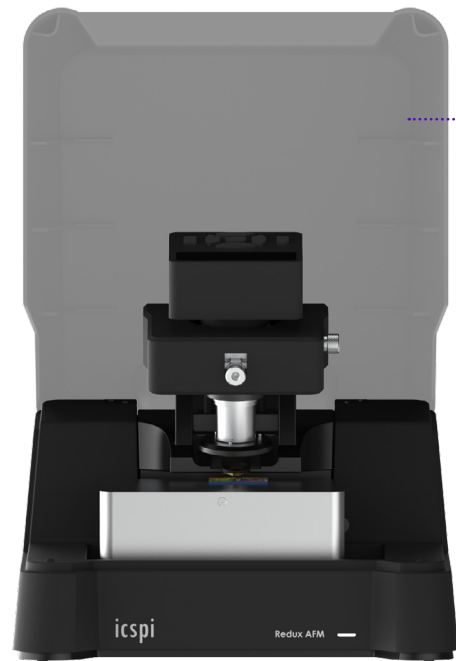
"I can attest that this technology is extremely reliable and can produce images that rival much larger and more expensive AFM systems."

Professor Michael Cullinan  
University of Texas at Austin, USA



# What we do

ICSPI designs and manufactures atomic force microscopes (AFMs) for research, industry and education. We push the limits of what is possible in nanoscale metrology with our team of engineers of the highest calibre working on our patented CMOS-MEMS technology. ICSPI is headquartered in Kitchener-Waterloo, Ontario, Canada.



## REDUX AFM

- ✓ **Fast**  
2 minute time-to-data
- ✓ **Easy-to-use**  
Scans in 3 clicks
- ✓ **Simple sample positioning**  
Motorized XY and Z stages

# Our Story

ICSPI was founded in 2007 with the goal of bringing robust, easy-to-use, nanoscale metrology to everyone. Although technology continues to shrink faster than ever, nanoscale imaging has remained relatively inaccessible. Frustrated by the poor versatility, complexity and high costs of traditional nanoscale imaging systems, ICSPI sought to revolutionize nanoscale imaging and bring the technology to every laboratory, student and researcher.

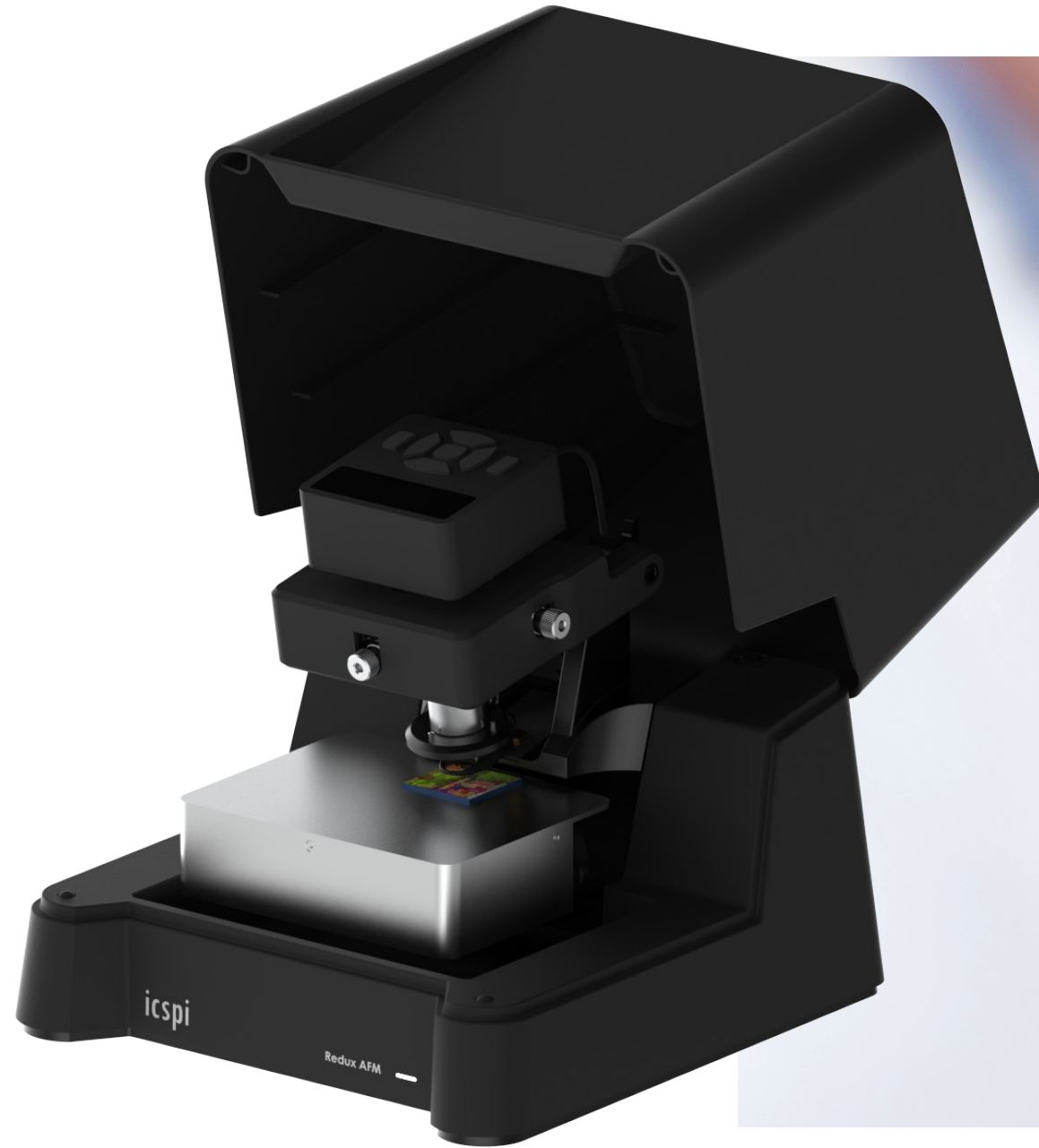
## About the Redux AFM

- Collect 3D images at the nanoscale in 3 clicks
- Laserless system: no laser alignment
- Simple sample positioning: motorized XY stage and integrated optical microscope
- Automatic approach: one-click automatic approach in seconds
- Unique tip cartridges and TipGuard: the only AFM with easy-to-handle tip cartridges

REDUX AFM

## A higher level of automation

- ✓ Automatic sweep, approach and scanning
- ✓ Motorized XY and Z stages
- ✓ Integrated optical microscope
- ✓ Environmental cover
- ✓ AFM tip cartridge with TipGuard



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# Unique AFM-on-a-chip Technology

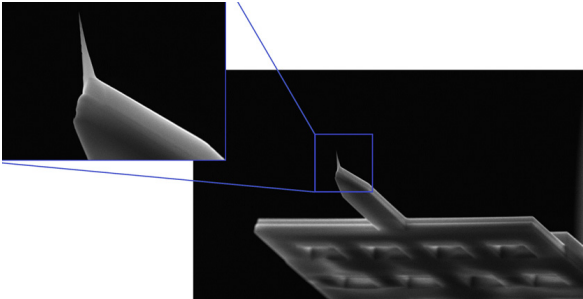
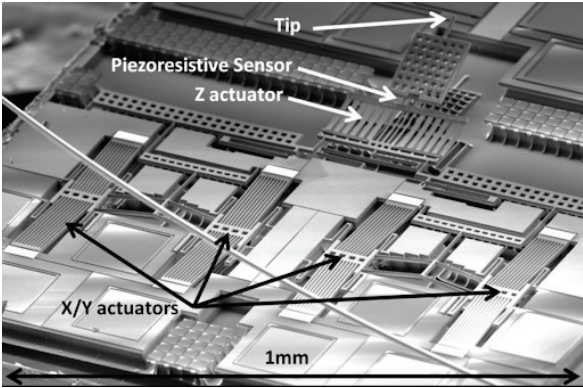
## AFM-on-a-Chip

The Redux AFM is an automated and laserless system: an integrated piezoresistive sensor allows for laser alignment-free operation and a fully automatic approach – so you can collect nanoscale data effortlessly.

All of the sensors and scanners of traditional AFM instruments have been integrated onto a single 1 mm x 1 mm chip.

“We have been blown away by its performance, ease-of-use and portability. The tool easily saves us several thousand dollars a month in AFM usage fees at third-party labs.”

**Dr. Michael Helander, CEO**  
OTI Lumionics, Canada



## Long Lifetime AFM Probe 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 silicon dioxide). 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

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Scan types	Topography, Phase
Max scan size	20 $\mu\text{m}$ $\times$ 20 $\mu\text{m}$
Min scan size	300 nm $\times$ 300 nm
Vertical scan range	10 $\mu\text{m}$
Noise floor	<0.5 nm rms

## Resolution and Speed

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

## Samples

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Sample platform area	105 mm $\times$ 95 mm
Max sample height	20 mm
Max sample weight	250 g

## Motorized XY Stage

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Sample positioning range (XY)	10 mm $\times$ 10 mm
Minimum step	<15 $\mu\text{m}$

## Integrated Optical Microscope

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

## System Dimensions and Weight

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Dimensions (L x W x H)	23.2 cm $\times$ 22.0 cm $\times$ 24.6 cm
Weight	4 kg

## Software and I/O

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

## Power

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Power supply	Class II (two prong)
Input	100–240 VAC $\sim$ 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	2 min	1 hr	30 min–1 hr
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 cartridges	✓	X	N/A
Maintenance-free	✓	X	X
3D images	✓	✓	X
Sub-nanometer resolution	✓	✓	X
Non-conductive samples	✓	✓	X

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Bundesanstalt für  
Materialforschung  
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## 3D nanoscale scans in 3 clicks

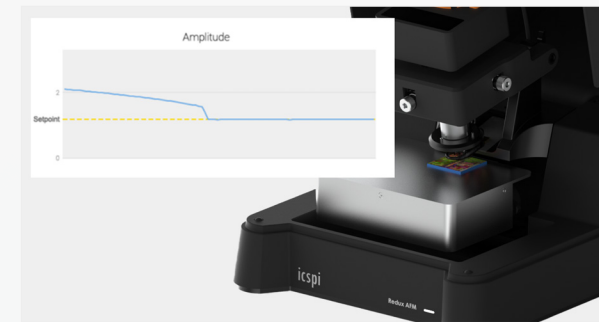
### 1. Simple sample positioning

Using the motorized XY stage and integrated optical microscope



### 2. Automatic approach

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



### 3. Fast scanning

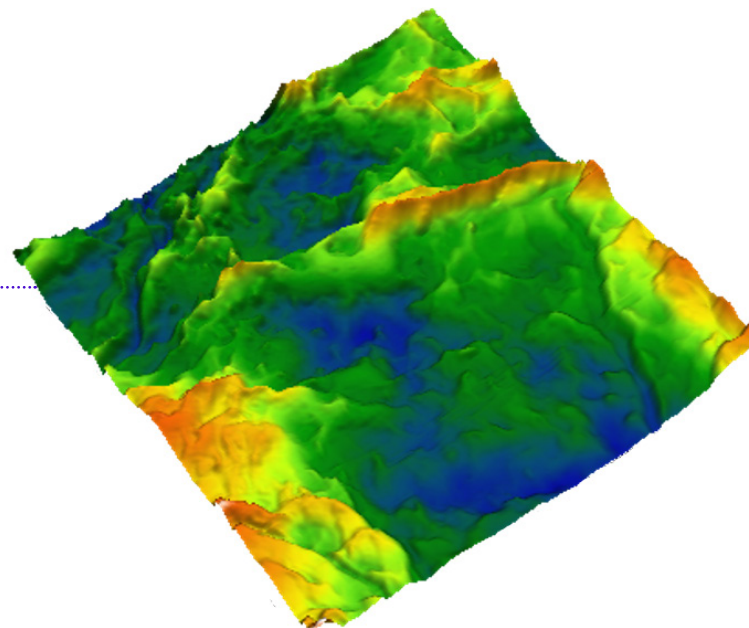
Capture routine scans in just over a minute



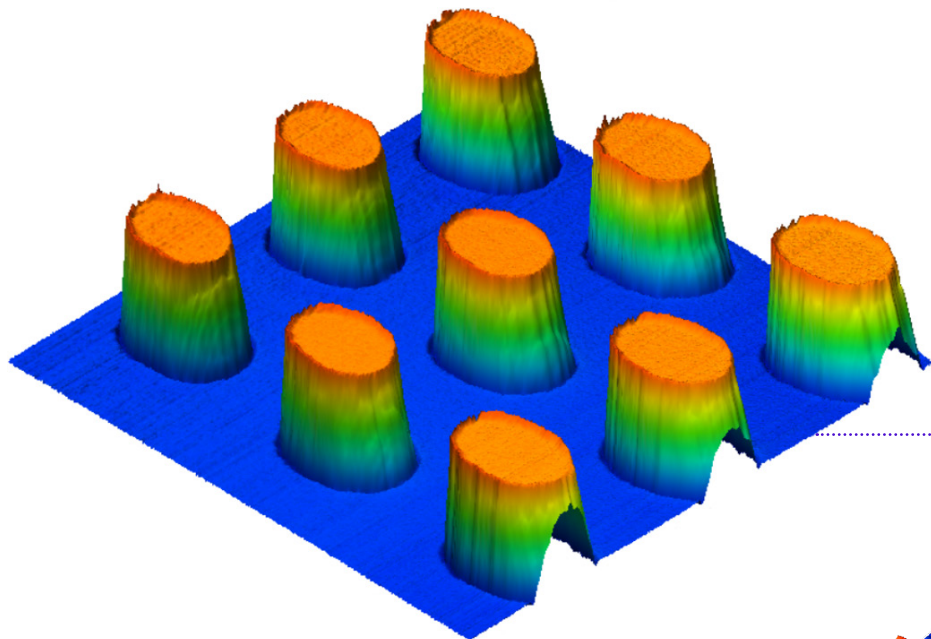
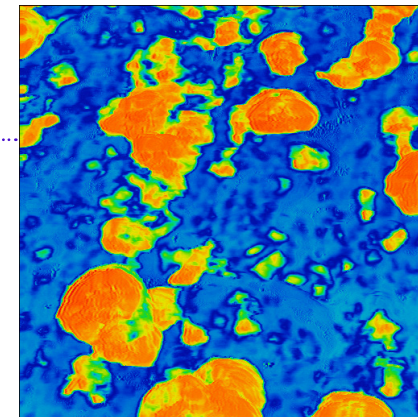


# Scan Images

3D scan of human skin sample

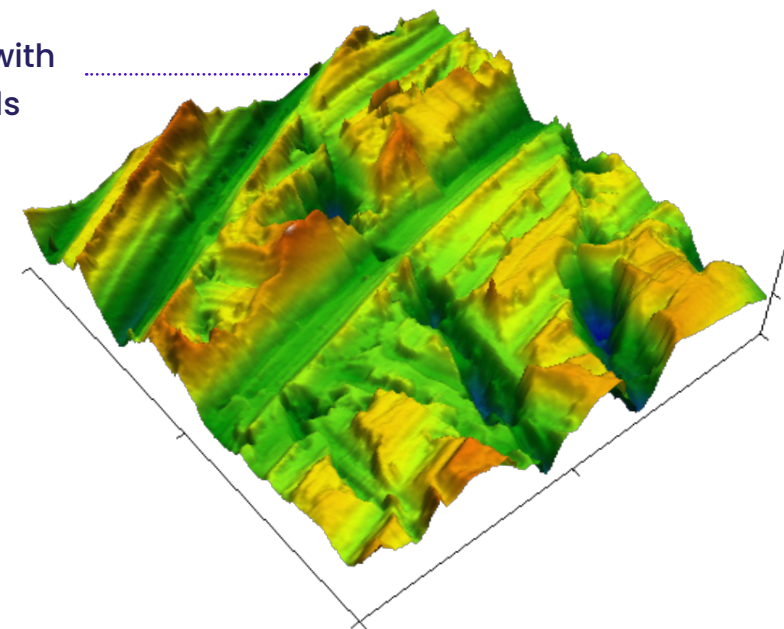


Phase scan of silica-polymer composite

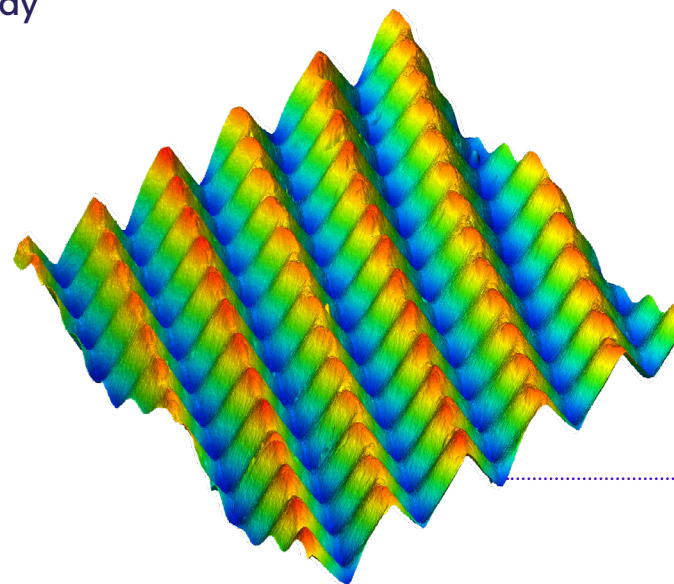
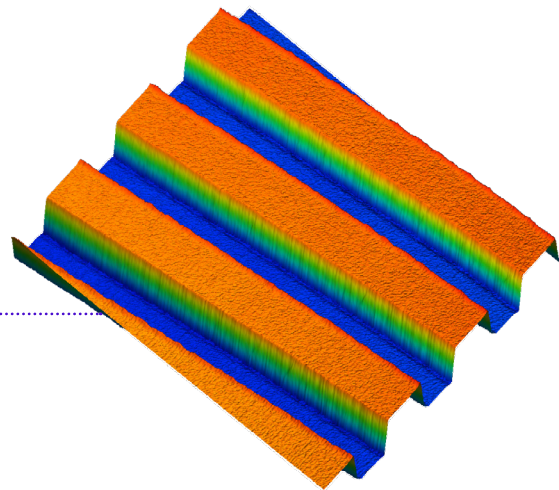


3D scan of micropillar array

3D scan of steel sample polished with 9-micron polycrystalline diamonds



3D scan of 200 nm half-pitch line grating



3D scan of nanostructured data storage media

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