

MicroGraph Title: Bryce Canyon in the Micro World

Description: Etched pillars onto a silicon substrate

Image Details:

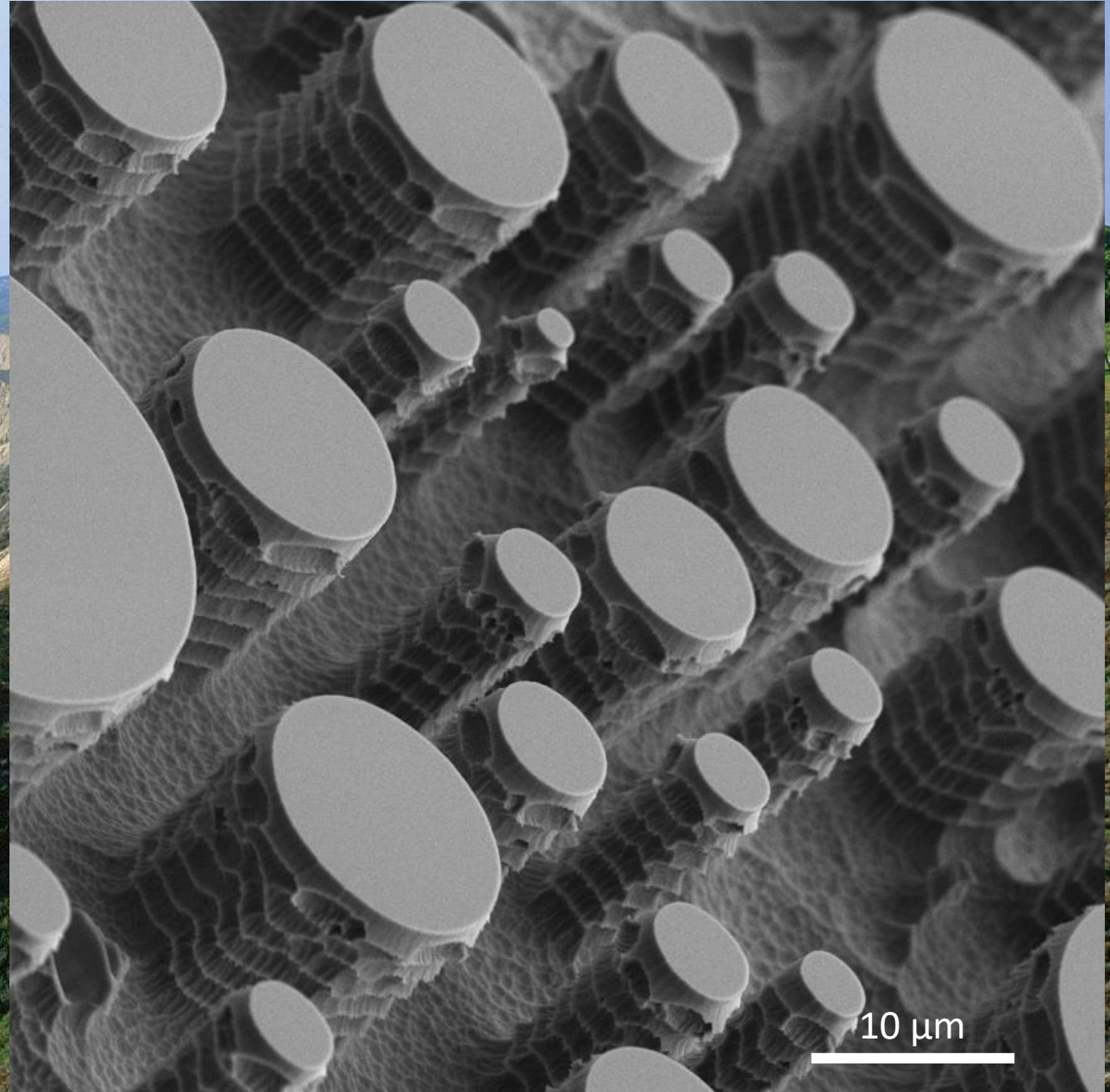
Orig. Mag: (3" x 4" image): 5.48 kX

Instrument: : TESCAN AMBER

Submitted By: Alena Siudova

Affiliation: TESCAN Group a.s.,

Sponsored by:



MicroGraph Title: Brno, the city where electron microscopes are born!

Description: A grayscale image has been created by EBL using single dots onto CSAR resist with a thickness of 125 nm.

Image Details:

Orig. Mag: (3" x 4" image): 2.57 kX

Instrument: : TESCAN CLARA

Submitted By: Alena Siudova

Affiliation: TESCAN Group a.s.,

Sponsored by:



MicroGraph Title: Lotus leaves

Description: Wells used for electroporation of cells

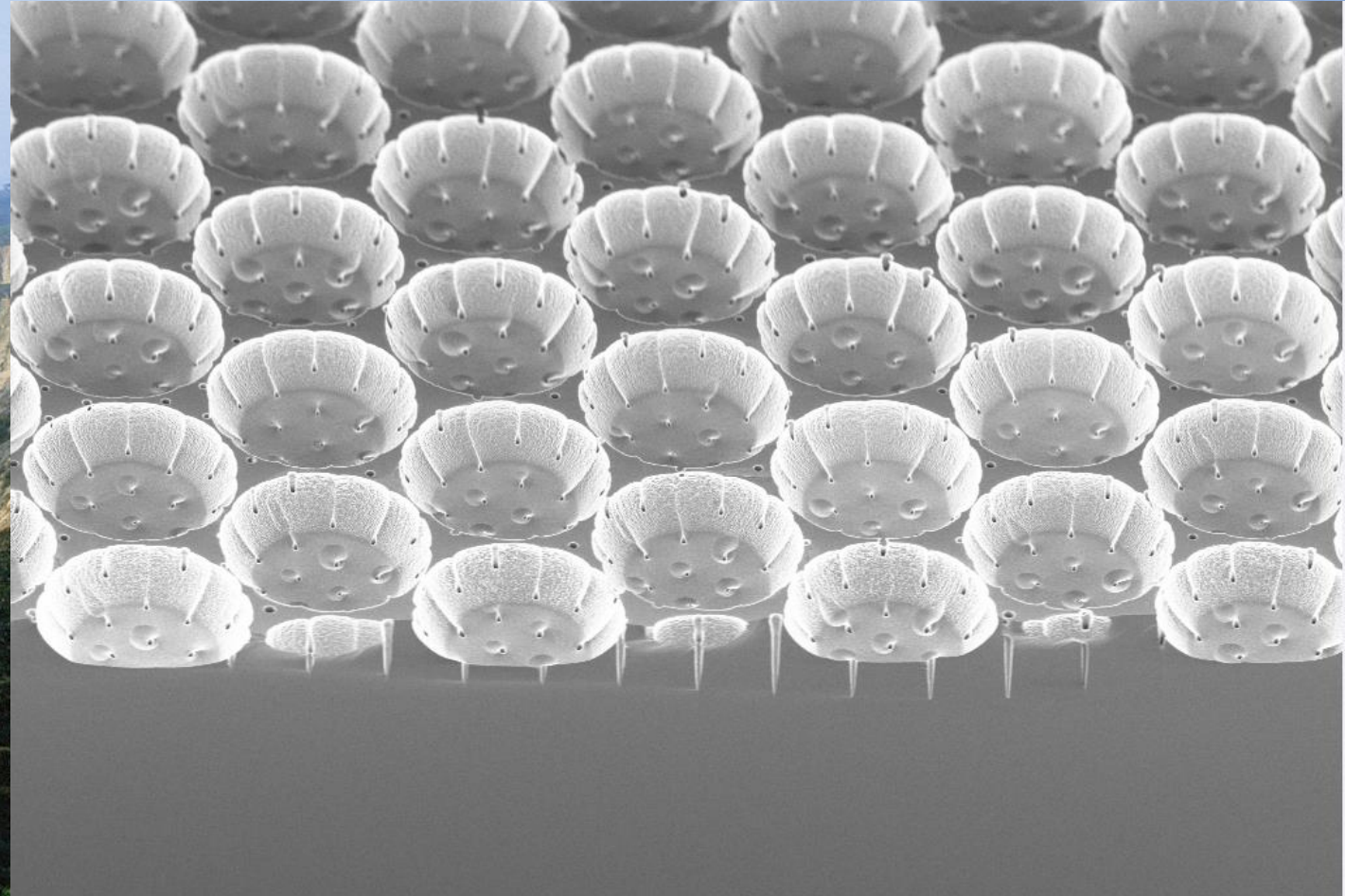
Image Details:

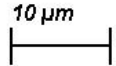
Orig. Mag: (3"x 4" image): 803X

Instrument: : Electron beam, Zeiss, Ultra 55 FE-SEM

Submitted By: Kavya Dathathreya

Affiliation: The Ohio State University



	Width = 142.4 µm	T = 0.0 °	X = 64.978 mm	B = 49.0 %	Signal A = InLens	Mixing = Off
	Mag = 803 X	Ap = 30.00 µm	Y = 64.804 mm	C = 31.4 %	Signal B = SE2	1 Feb 2024
	WD = 4.5 mm	EHT = 3.00 kV	Z = 34.338 mm	14.9 Secs	22um_02.tif	

Sponsored by:



MicroGraph Title: SEM images of fabricated Si metasurfaces

Description: Collapsed Si cylinders

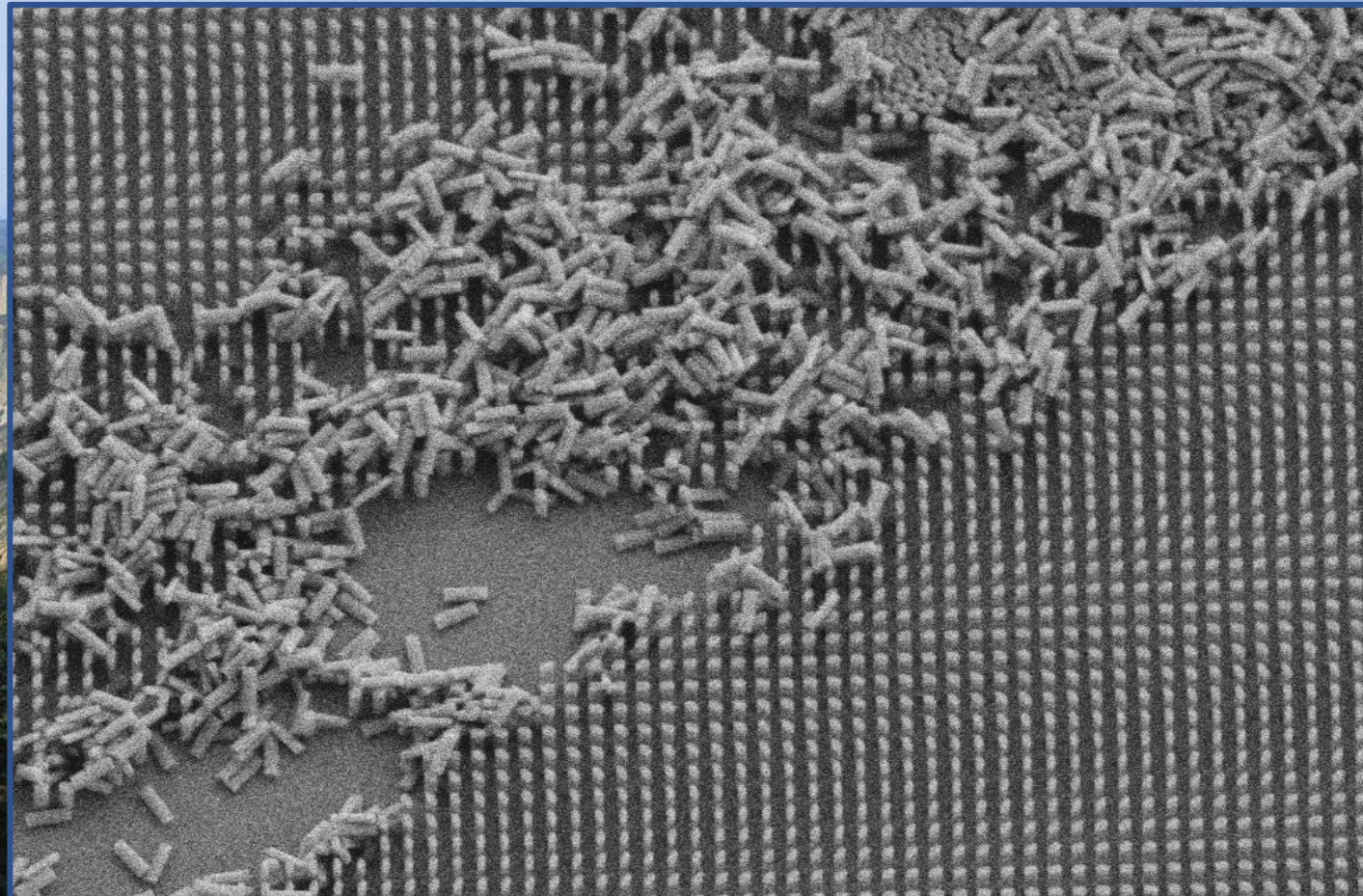
Image Details:

Orig. Mag: 19.65 KX

Instrument: : Zeiss, Supra 55VP

Submitted By: Abdoulaye Ndao

Affiliation: UCSD, **NDAO** lab: **N**ano **D**evelopments and **A**ppplied **O**ptics



1 μ m

Mag = 6.13 KX

EHT = 3.00 kV

Signal A = SE2

Signal B = SE2

WD = 7.9 mm

Aperture Size = 10.00 μ m

Stage at T = 28.7 °

Date :30 Mar 2023



Sponsored by:



MicroGraph Title: SEM images of fabricated Si metasurfaces

Description: Collapsed Si cylinders

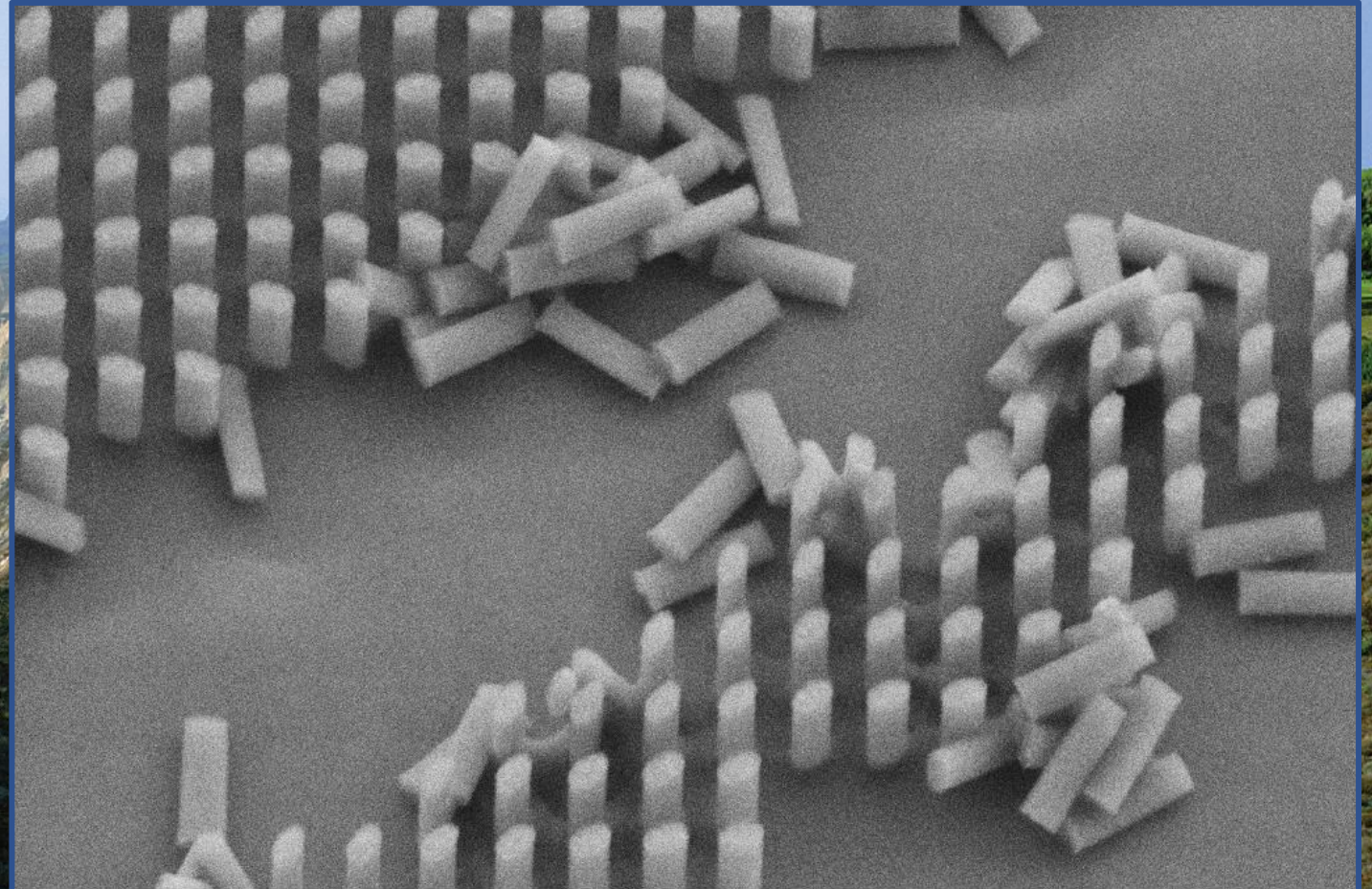
Image Details:

Orig. Mag: 19.65 KX

Instrument: : Zeiss, Supra 55VP

Submitted By: Abdoulaye Ndao

Affiliation: UCSD, **NDAO** lab: **N**ano **D**evelopments and **A**ppplied **O**ptics



200 nm
┆┆┆

Mag = 19.65 K X EHT = 3.00 kV

Signal A = SE2 Signal B = SE2

WD = 7.9 mm

Aperture Size = 10.00 μ m

Stage at T = 28.7 °

Date :30 Mar 2023



Sponsored by:



MicroGraph Title: Dominos mutual support

Description: Pretest HSQ, created by EBL

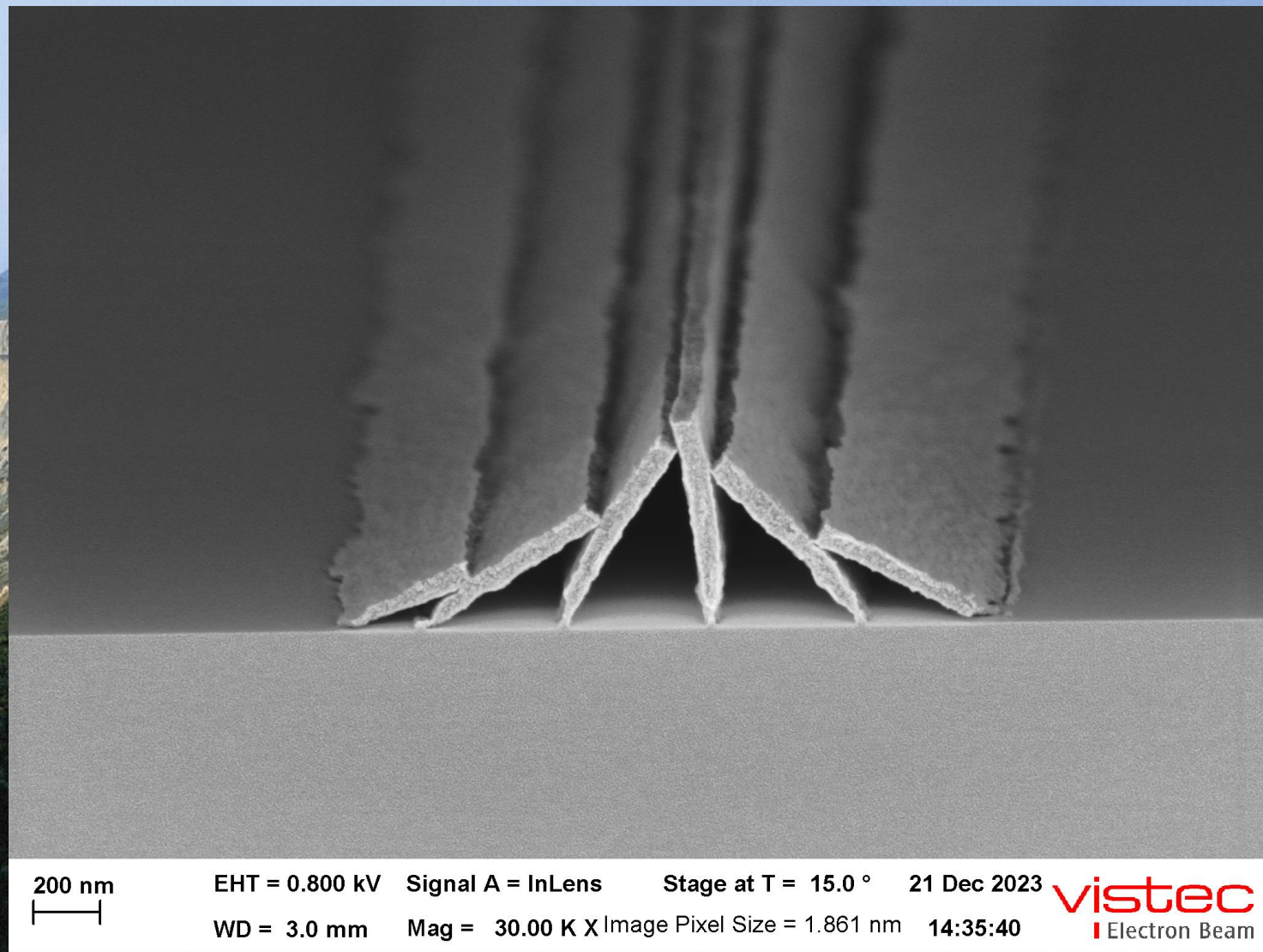
Image Details:

Orig. Mag: (3"x 4" image): SEM 30000x

Instrument: : Zeiss, GeminiSEM 560

Submitted By: Marko Brese, Ines Stolberg

Affiliation: Vistec Electron Beam GmbH



200 nm
|-----|

EHT = 0.800 kV Signal A = InLens Stage at T = 15.0 ° 21 Dec 2023
WD = 3.0 mm Mag = 30.00 K X Image Pixel Size = 1.861 nm 14:35:40

vistec
Electron Beam

Sponsored by:



MicroGraph Title: Living in bubbles
(Bubble dome)

Description: Amin poison
(developer), created by EBL

Image Details:

Orig. Mag: (3"x 4" image): 100X

Instrument: : Zeiss, Axio Imager.Z2 Vario

Submitted By: V. Deuter, V. Mohrholz, I. Stolberg

Affiliation: Vistec Electron Beam GmbH



Sponsored by:



MicroGraph Title: Eggstraordinary elegance: Nature's 3D printed wonders

Description: This micrograph showcases a real-size butterfly egg, intricately replicated using advanced 3D printing technology. Emulating evolution's precision, the 1:1 scale model demonstrates the remarkable detail achievable through two-photon lithography, revealing the microstructures that are often the architects of nature's masterpieces.

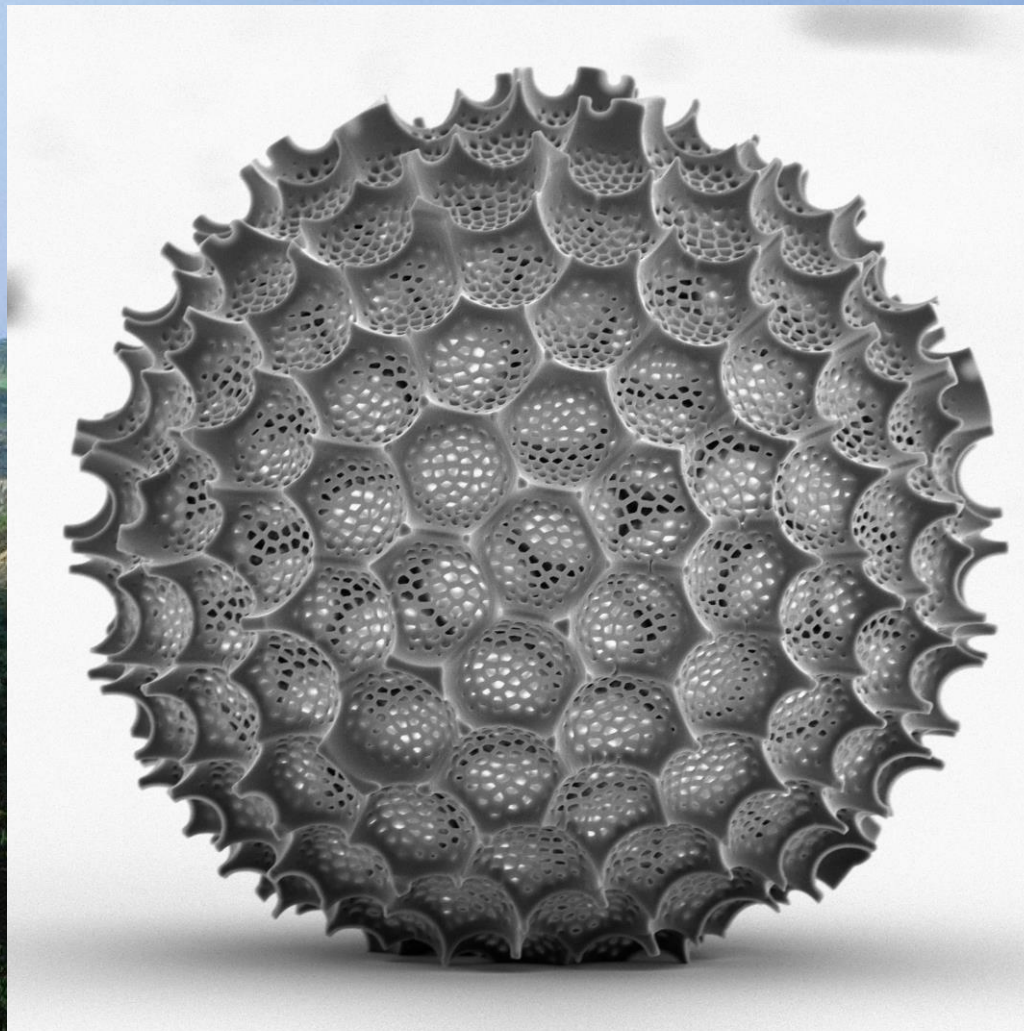
Image Details:

Orig. Mag: (3" x 4" image): 150x

Instrument: : TESCAN VEGA4 LMU, Electron

Submitted By: Taylor Stark, Andrea Bertoncini

Affiliation: Nanoscribe GmbH & Co. KG



Sponsored by:



	FoV 648 μm	WD 29.78 mm	Speed 5	200 μm	
Det SE	Scan Mode RESOLUTION		Energy 15 keV	Time 13:29:45	
Date 2023-10-17	Stage Tilt -40.0°	Est. Current 32 pA			

MicroGraph Title: Voxel mushrooms: Where digital fields flourish

Description: These mushrooms are magic, but they won't get you high—unless you consider scaling the heights of technological innovation a form of euphoria. Created through AI diffusion with a nature-inspired prompt, these 'shrooms' are a nod to the forest's unsung recyclers, digitally grown and meticulously tiled into a 2.5D art piece. This electron micrograph captures the essence of organic patterns, transforming them into a landscape that blurs the line between the digital realm and the natural world.

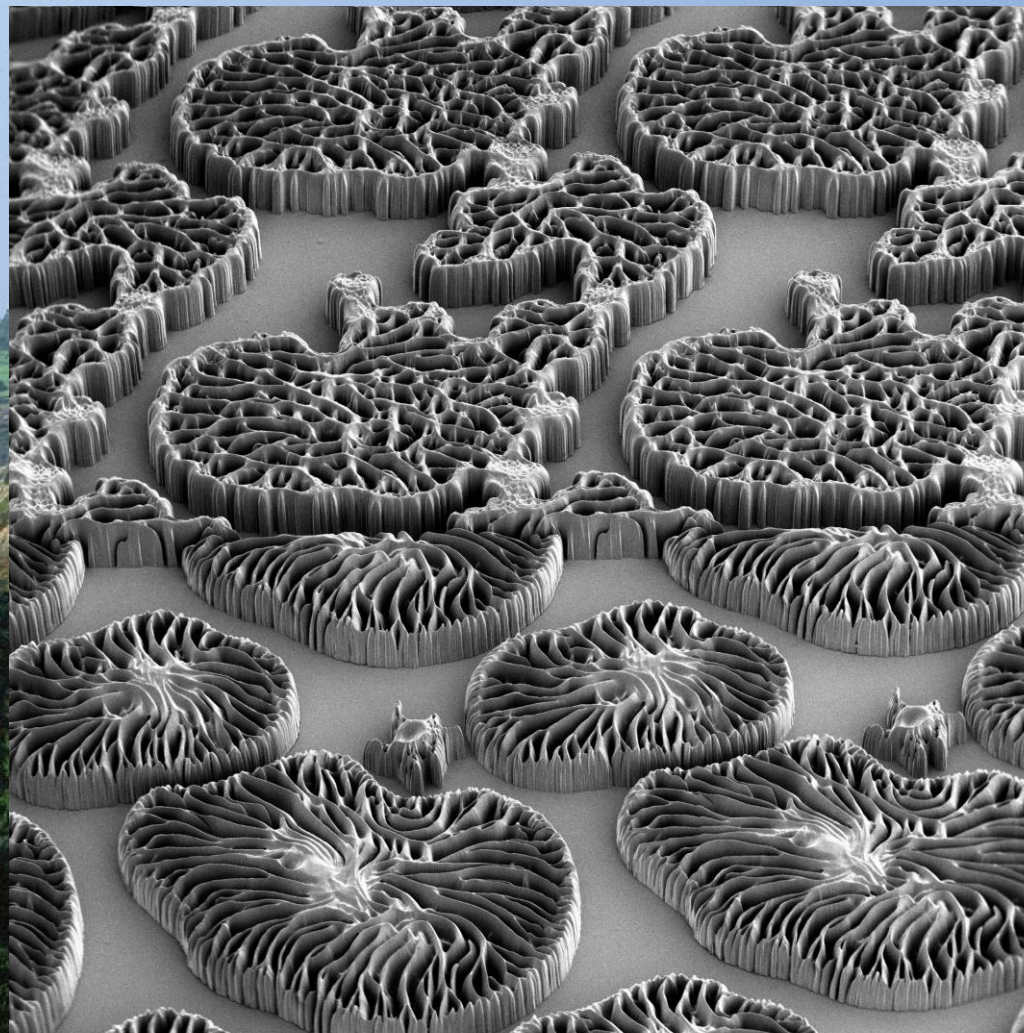
Image Details:

Orig. Mag: (3" x 4" image): 10x

Instrument: : TESCAN VEGA4 LMU, Electron

Submitted By: Arwin Shrestha, Andrea Bertoncini

Affiliation: Nanoscribe GmbH & Co. KG



Sponsored by:



	FoV 7.08 mm	WD 31.37 mm	Speed 5	2 mm	
Det SE	Scan Mode RESOLUTION		Energy 7.5 keV	Time 11:49:07	
Date 2023-06-19	Stage Tilt -45.0°	Est. Current 29 pA			

MicroGraph Title: Mining for Gold

Description: Profile View in the FusionScope shows the AFM silicon tip and cantilever taking a measurement of a gold (Au) nanoparticle.

Image Details:

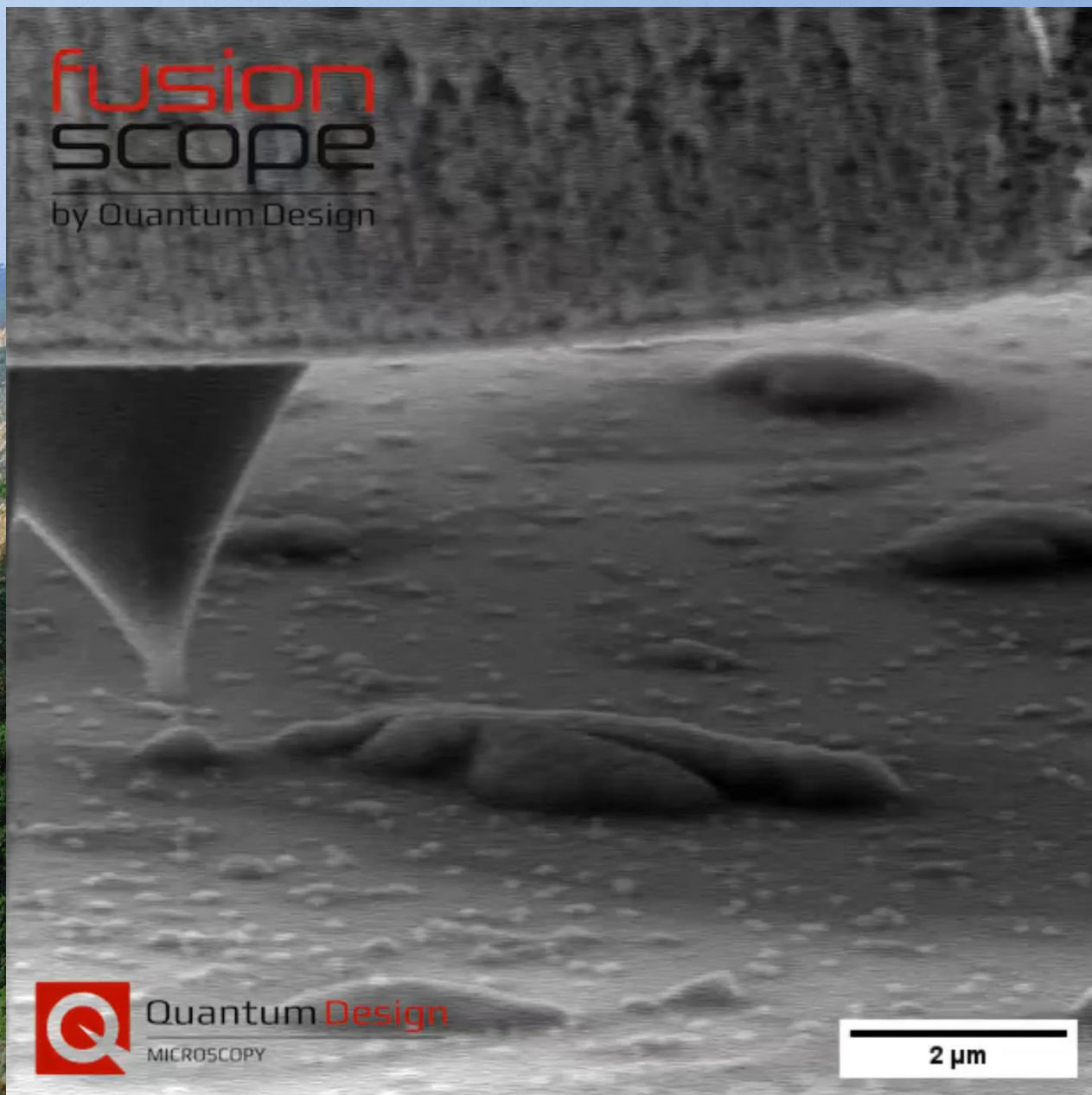
Orig. Mag: (3" x 4" image): 10kX

Instrument: : Quantum Design, FusionScope 15

Submitted By: Stefano Spagna

Affiliation: Quantum Design

Sponsored by:



MicroGraph Title: The smallest Kiss

Description: Profile View in the FusionScope shows precise alignment of Silicon cantilevers for a fleeting kiss between AFM cantilevers.

Image Details:

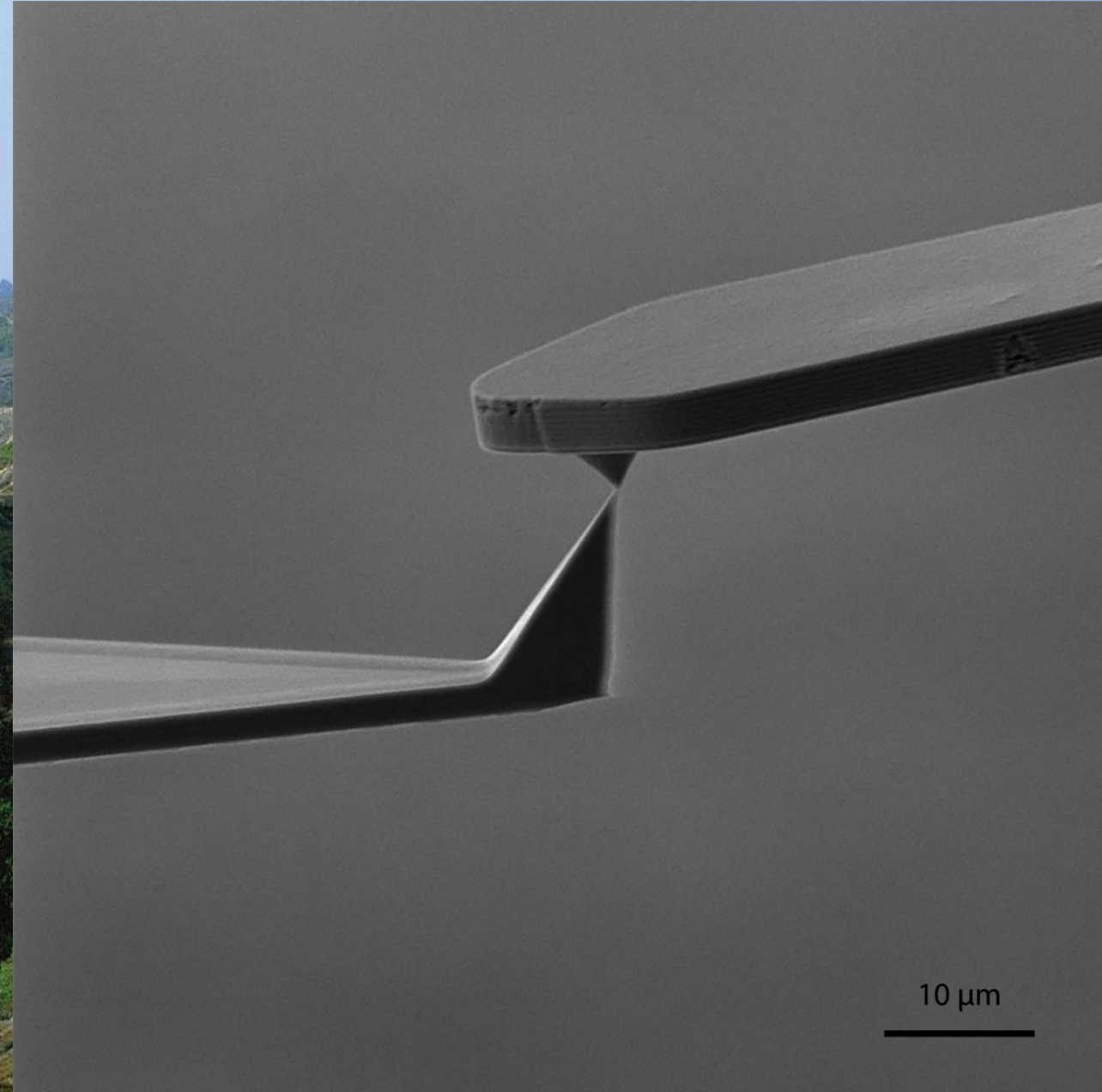
Orig. Mag: (3" x 4" image): 5kX

Instrument: : Quantum Design, FusionScope 7.5

Submitted By: Stefano Spagna

Affiliation: Quantum Design

Sponsored by:



MicroGraph Title: Nano-sized

Pyramide du Louvre

Description: Profile View in the FusionScope shows the AFM cantilever on top of a nano-Louvre Museum Pyramid

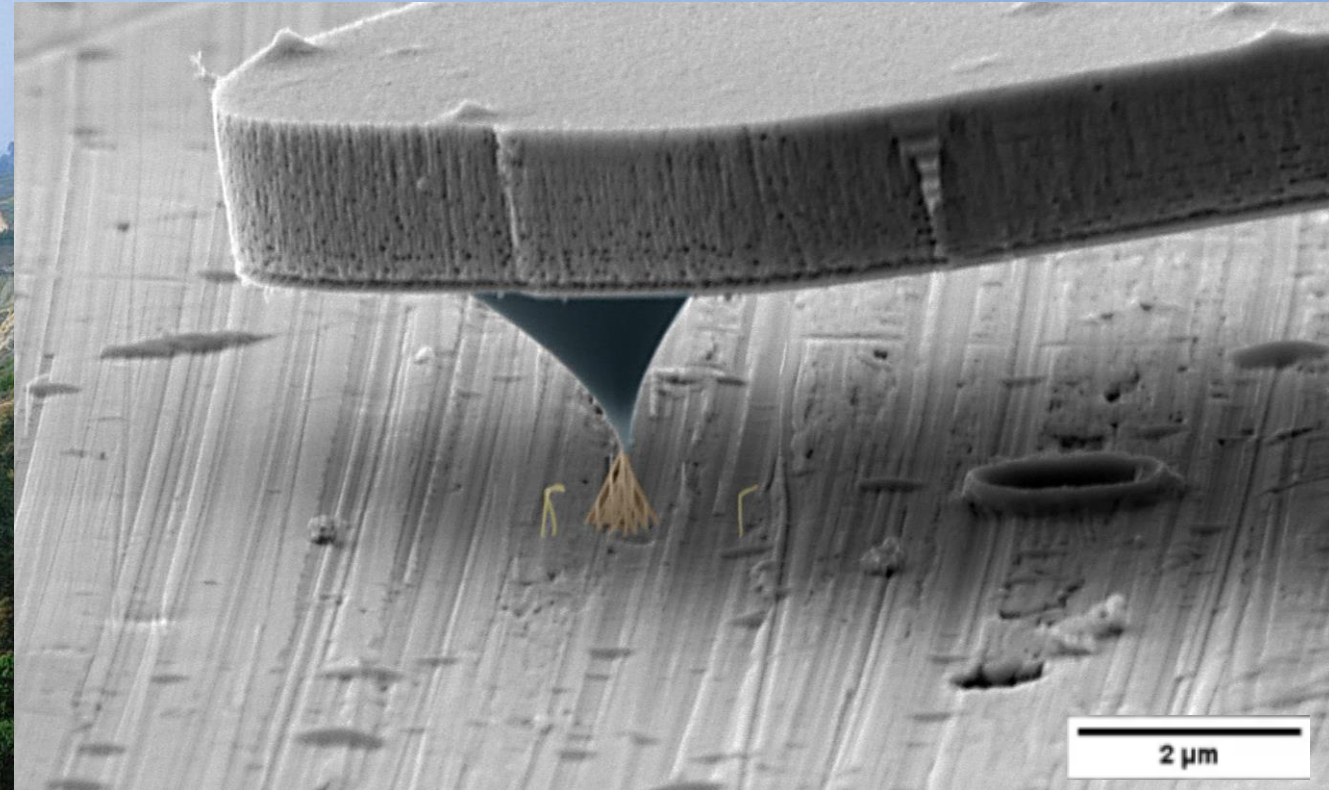
Image Details:

Orig. Mag: (3"x 4" image): 10kX

Instrument: : Quantum Design, FusionScope 15

Submitted By: Stefano Spagna

Affiliation: Quantum Design



Sponsored by:



MicroGraph Title: Beautiful flowers

Description: Bismuth selenide

Image Details:

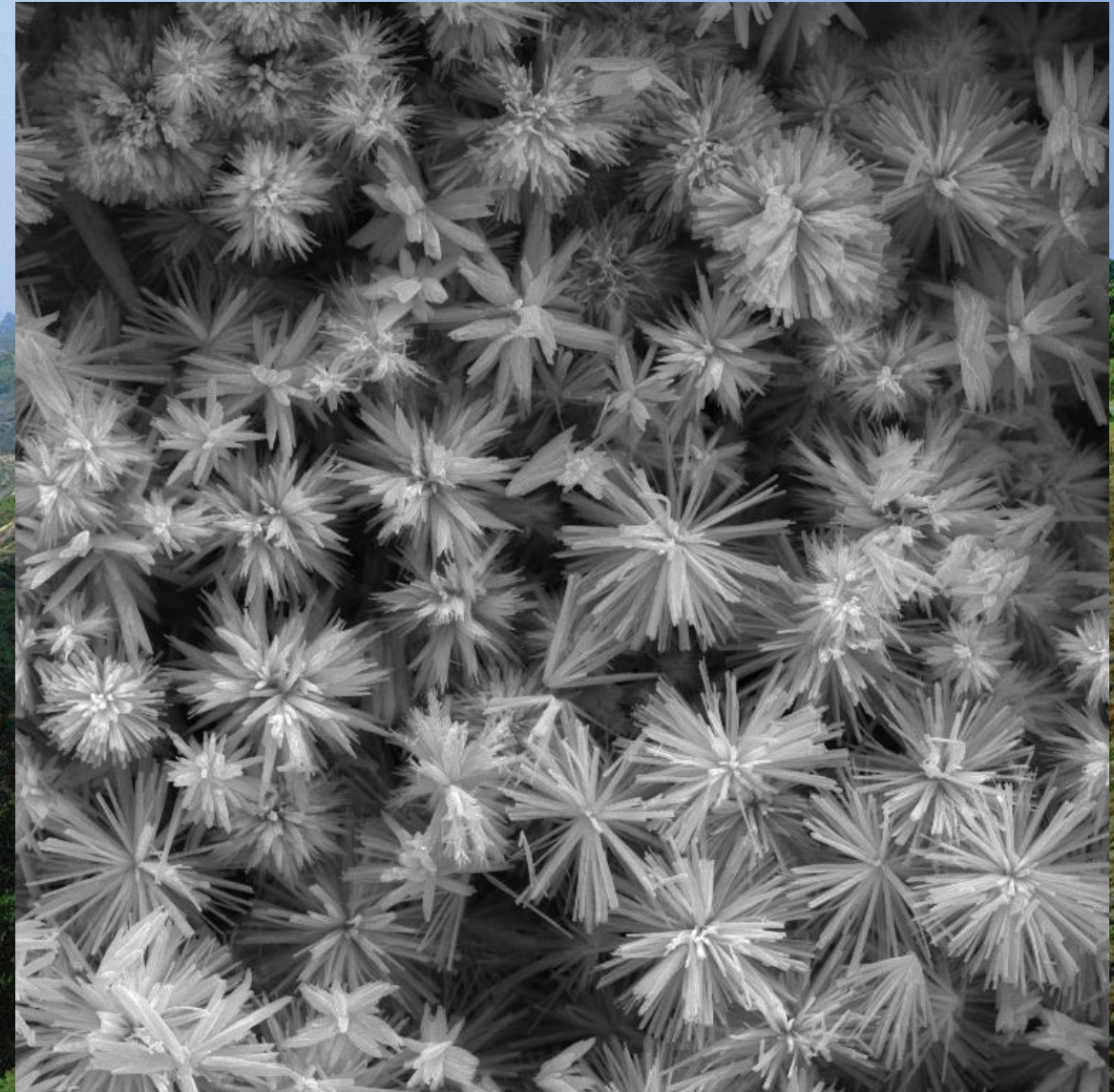
Orig. Mag: (3"x 4" image): 4.55 kX

Instrument: : VEGA3 TESCAN

Submitted By: Shiva Pesaran

Affiliation: Central lab Shiraz university

Sponsored by:



SEM HV: 20.0 kV	WD: 7.16 mm	VEGA3 TESCAN
View field: 41.7 μ m	Det: SE	10 μ m
SEM MAG: 4.55 kx	Date(m/d/y): 12/13/23	

MicroGraph Title: Michelin Worms

Description: Freestanding Au x-ray transmission grating from late 80's/early 90's

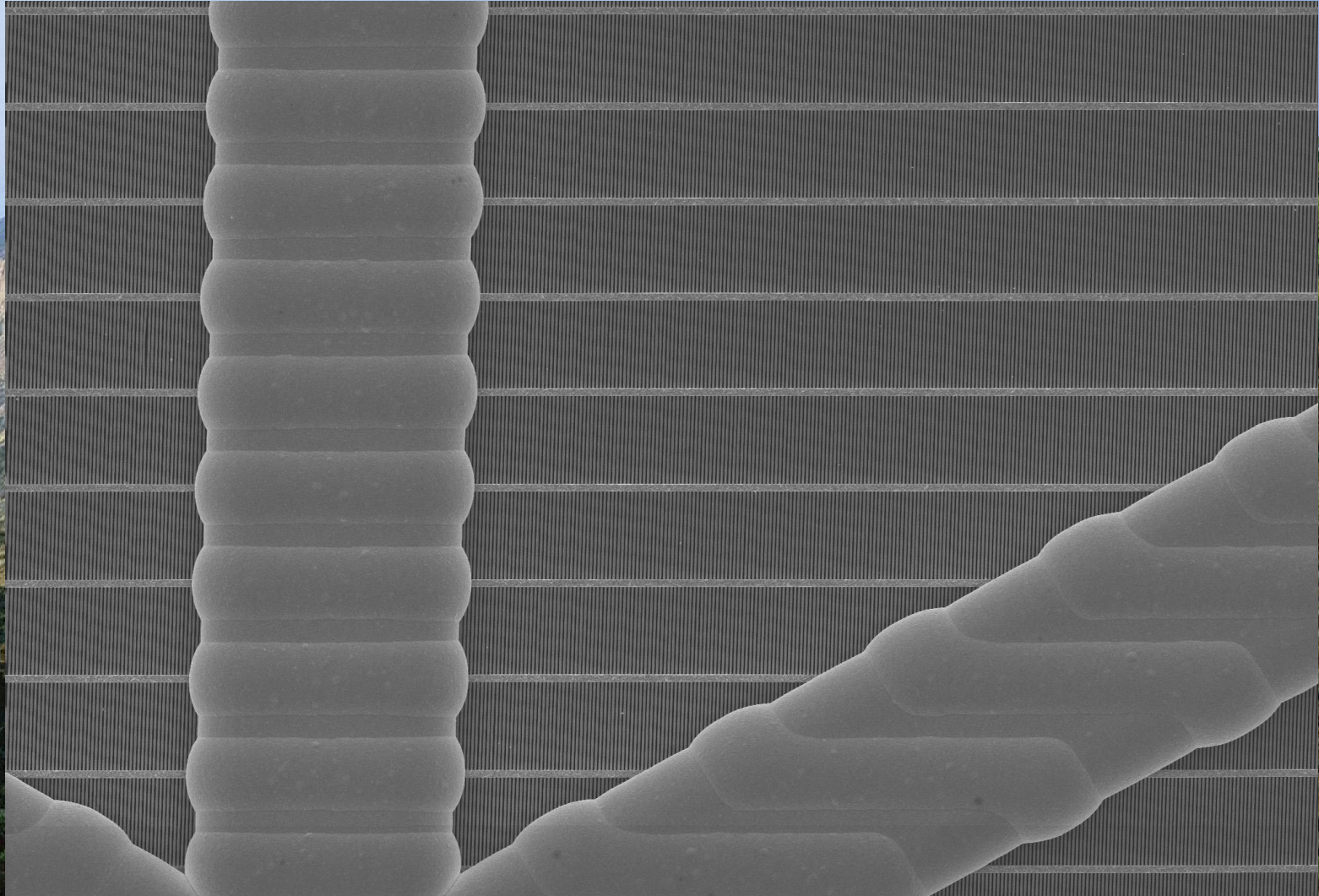
Image Details:

Orig. Mag: (3" x 4" image): 326X

Instrument: : Amray, FE SEM 3300

Submitted By: Ralf Heilmann, Julia Hart

Affiliation: MIT, Izentis LLC



Sponsored by:



326X
15.0KV 13.9mm -20.0

100µm

2/28/2024

SEMTECH SOLUTIONS

MicroGraph Title: Michelin Worms

Description: Freestanding Au x-ray transmission grating from late 80's/early 90's

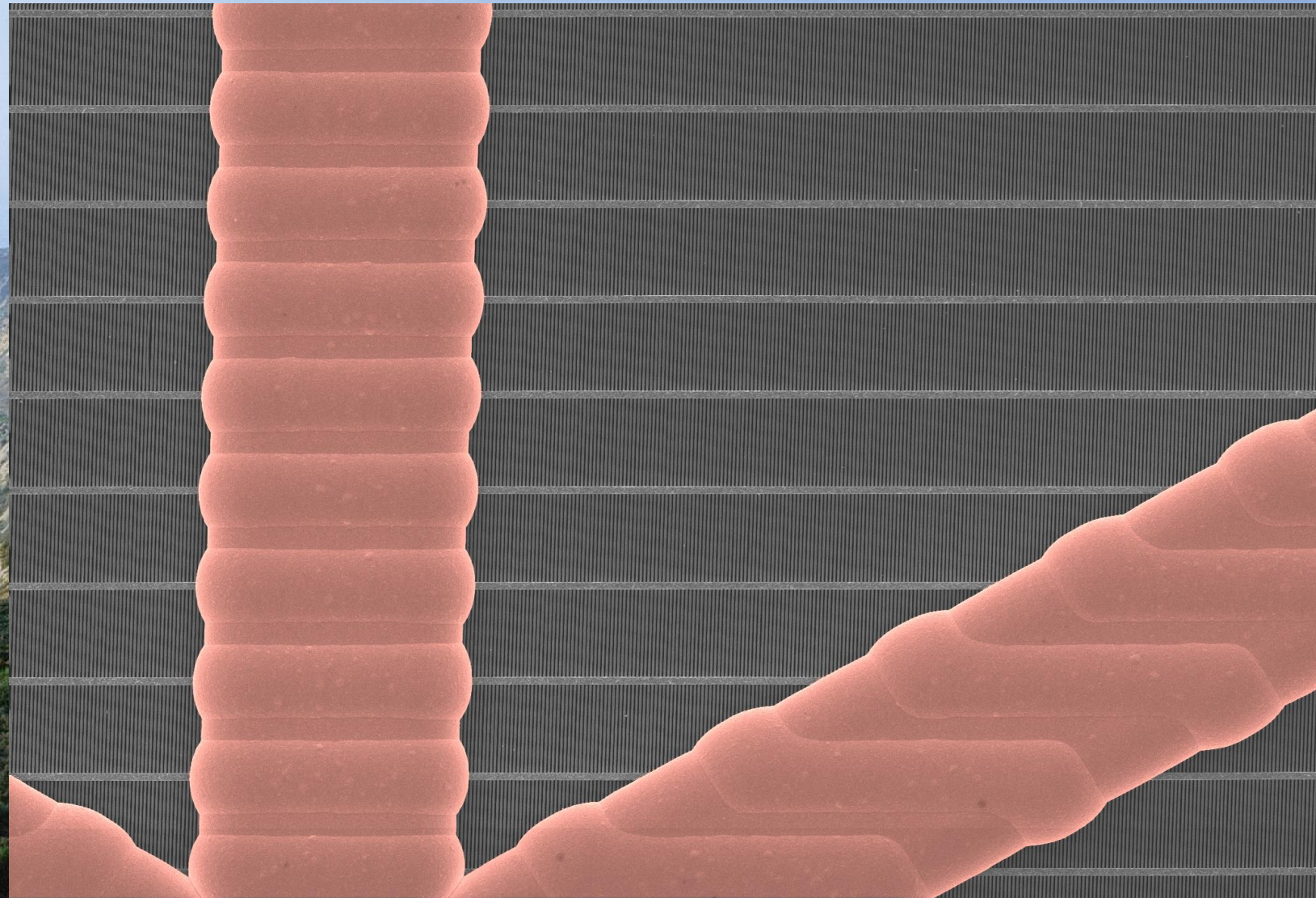
Image Details:

Orig. Mag: (3" x 4" image): 326X

Instrument: : Amray, FE SEM 3300

Submitted By: Ralf Heilmann, Julia Hart

Affiliation: MIT, Izentis LLC



Sponsored by:



MicroGraph Title: Inverted Yin-Yang

Description: dl/dV image of a pattern consisting of dangling bonds on Si(100)-H. The lighter area of the symbol was patterned using switching raster litho.

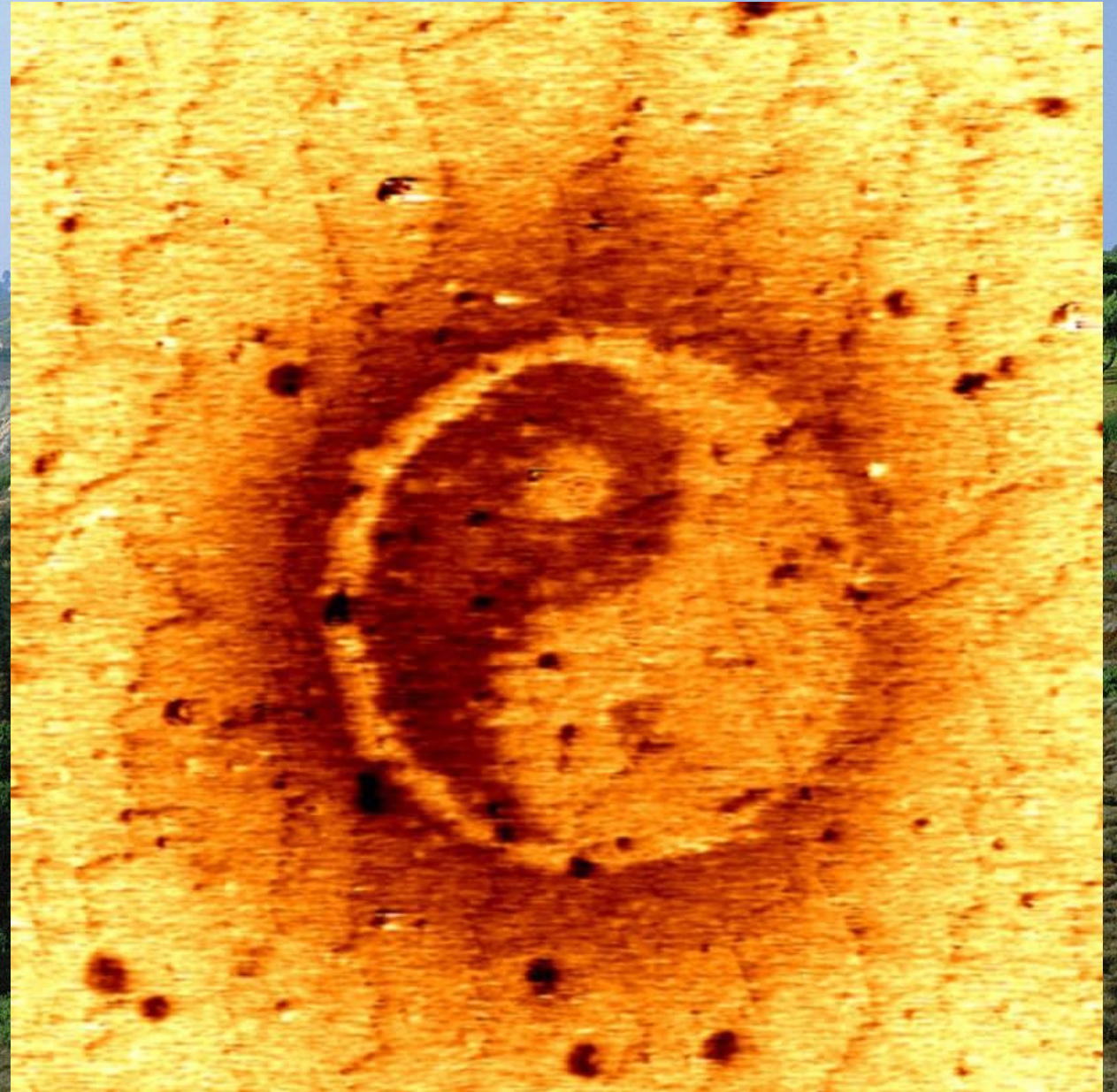
Image Details:

Orig. Mag: (6.4" x 6.4" image): 1.8 MX

Instrument: : Custom STM

Submitted By: James Owen, & Josh Ballard

Affiliation: Zyvex Labs



Sponsored by:



MicroGraph Title: Christmas Trees

Description: “Burning” effect in gold electroplating occurring when the current density is excessively high, resulting in too rapid deposition.

Image Details:

Orig. Mag: (3”x 4” image): 9000x
Instrument: Hitachi Regulus 8230
Submitted By: Florian Döring
Affiliation: XRnanotech

Sponsored by:



MicroGraph Title: Zebra-shaped i-line
Cones

Description: High-Throughput
Grayscale Litho with an i-line stepper

Image Details:

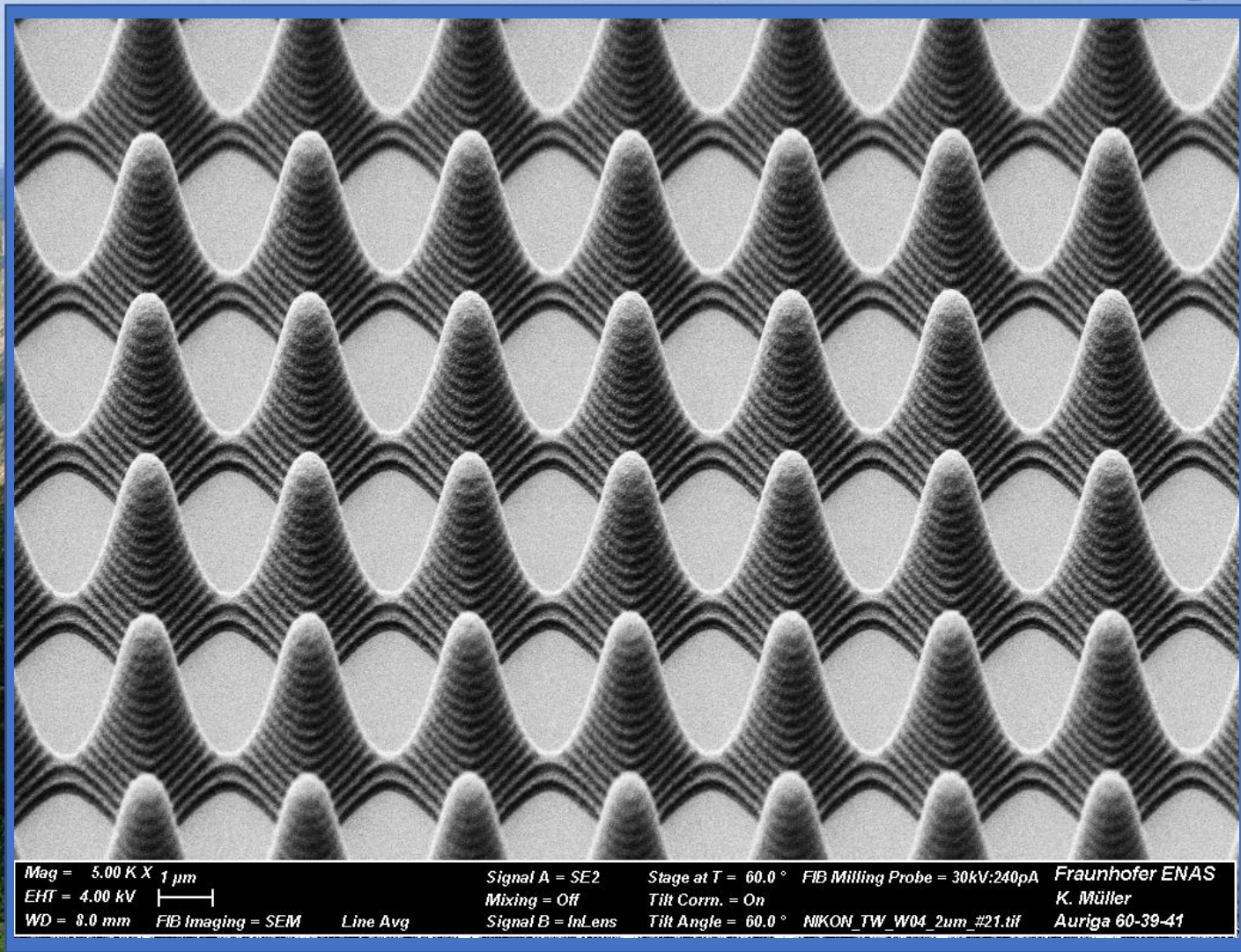
Orig. Mag: (3"x 4" image): 5kX

Instrument: : Zeiss, Auriga 60

Submitted By: Christian Helke, Sebastian
Schermer

Affiliation: Fraunhofer ENAS

Sponsored by:



MicroGraph Title: Georg Clooney's new i-line Nespresso Campaign

Description: High-Throughput Grayscale Litho with an i-line stepper

Image Details:

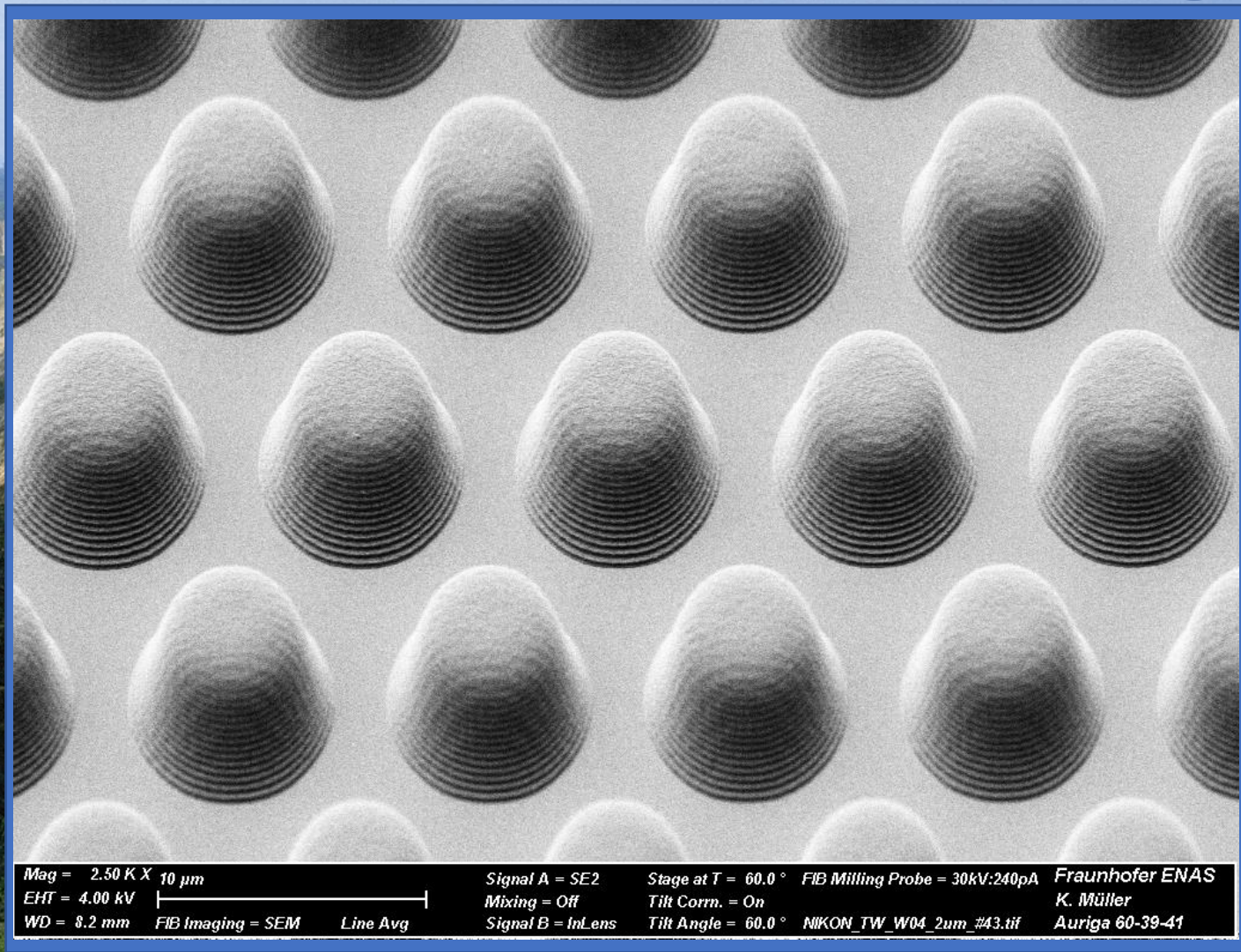
Orig. Mag: (3"x 4" image): 2.5kX

Instrument: : Zeiss, Auriga 60

Submitted By: Christian Helke, Sebastian Schermer

Affiliation: Fraunhofer ENAS

Sponsored by:



MicroGraph Title: Everything but Needle

Description: High-Throughput Grayscale Litho with an i-line stepper

Image Details:

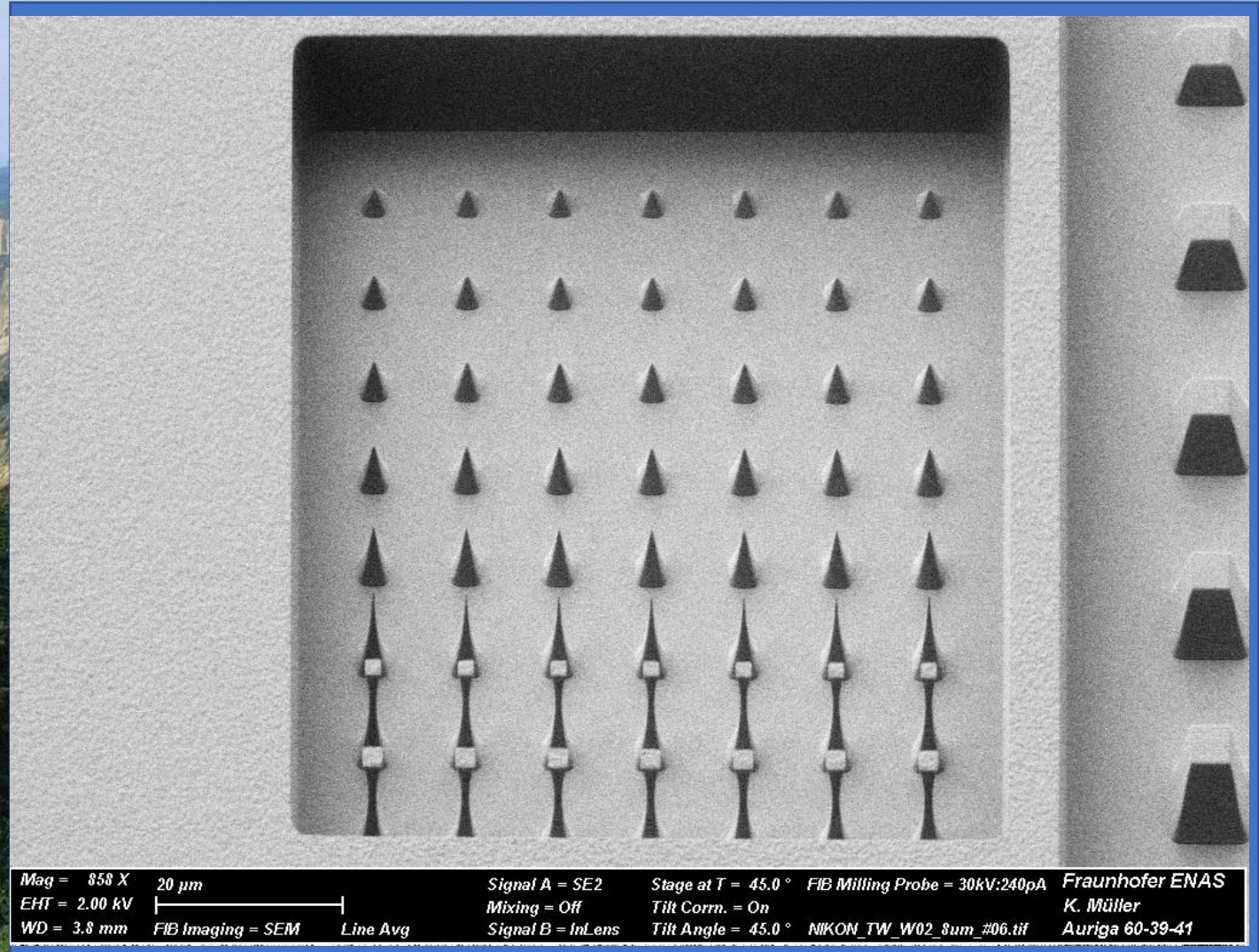
Orig. Mag: (3"x 4" image): 8.58kX

Instrument: : Zeiss, Auriga 60

Submitted By: Christian Helke, Sebastian Schermer

Affiliation: Fraunhofer ENAS

Sponsored by:



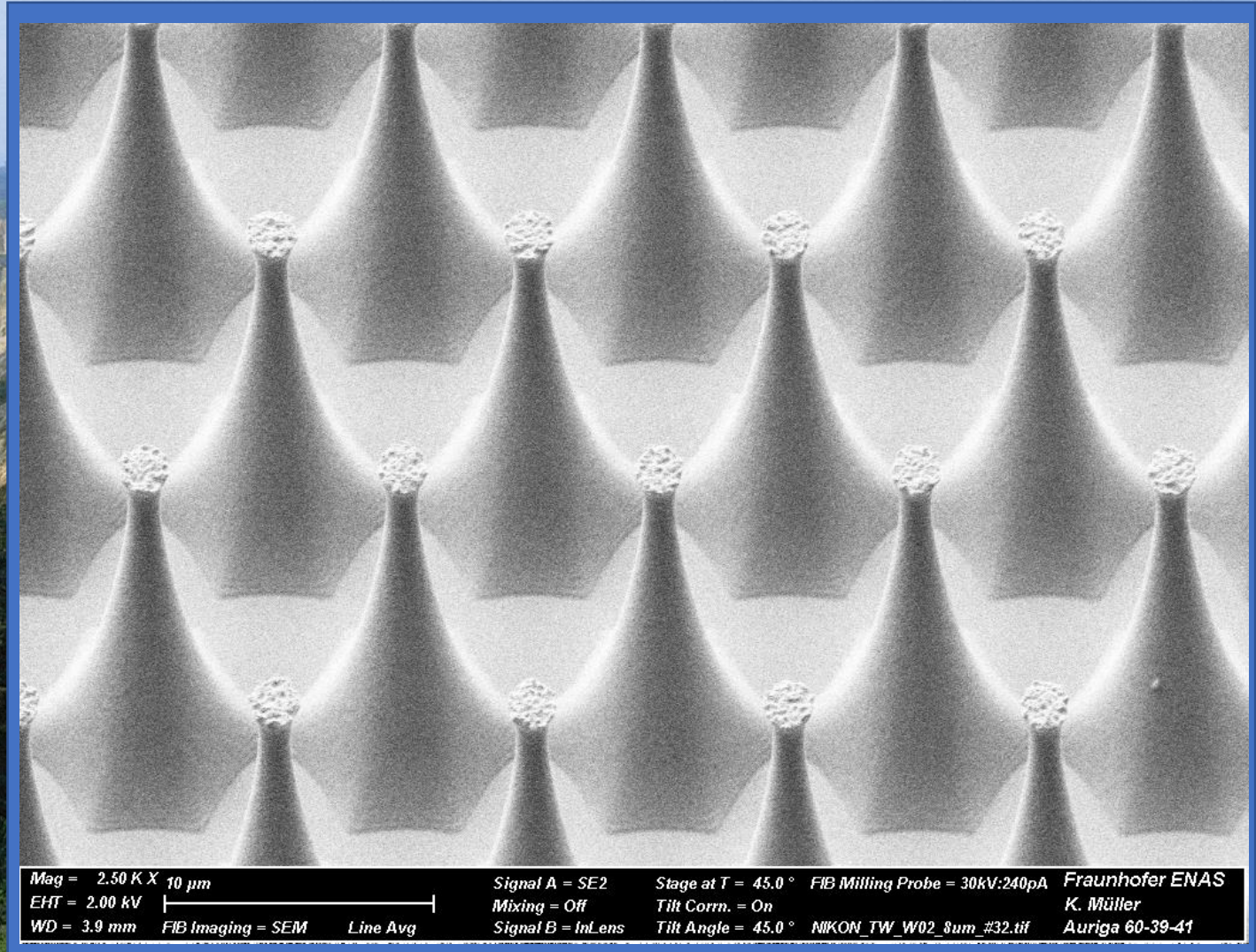
MicroGraph Title: Gramophone –
Smallest cochlear implants for an ant

Description: High-Throughput
Grayscale Litho with an i-line stepper

Image Details:

Orig. Mag: (3" x 4" image): 2.5kX
Instrument: : Zeiss, Auriga 60
Submitted By: Christian Helke, Sebastian Schermer
Affiliation: Fraunhofer ENAS

Sponsored by:



MicroGraph Title: Isolate rod in the middle of nowhere

Description: Rod like structure etched in Si by grayscale resist

Image Details:

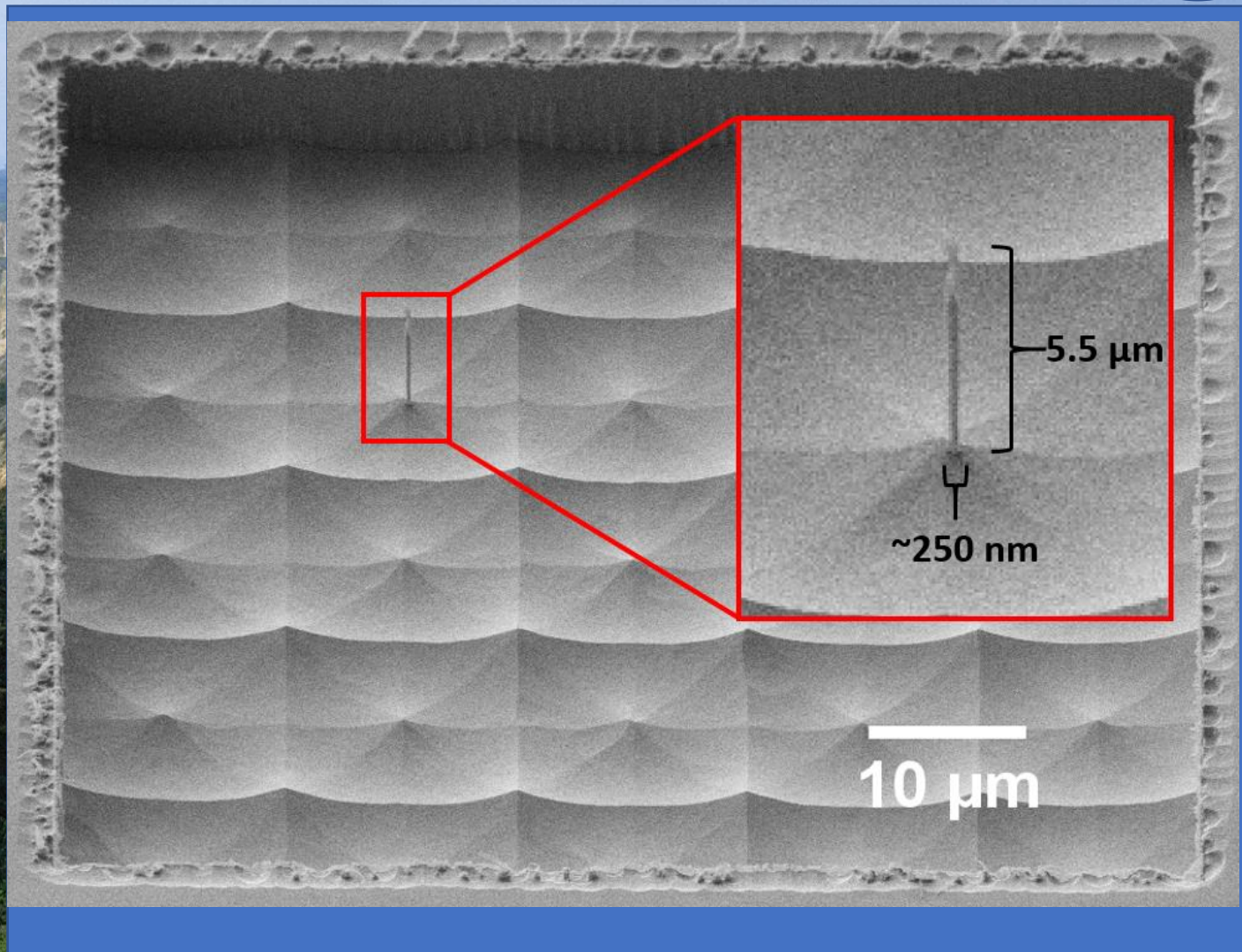
Orig. Mag: (3"x 4" image): 1.37kX

Instrument: : Zeiss, Auriga 60

Submitted By: Christian Helke, Sebastian Schermer

Affiliation: Fraunhofer ENAS

Sponsored by:



MicroGraph Title: Marvin

Description: Helium ion implanted silicon that reveals the snowy grayscale of the robotic point of view. HIM micrograph.

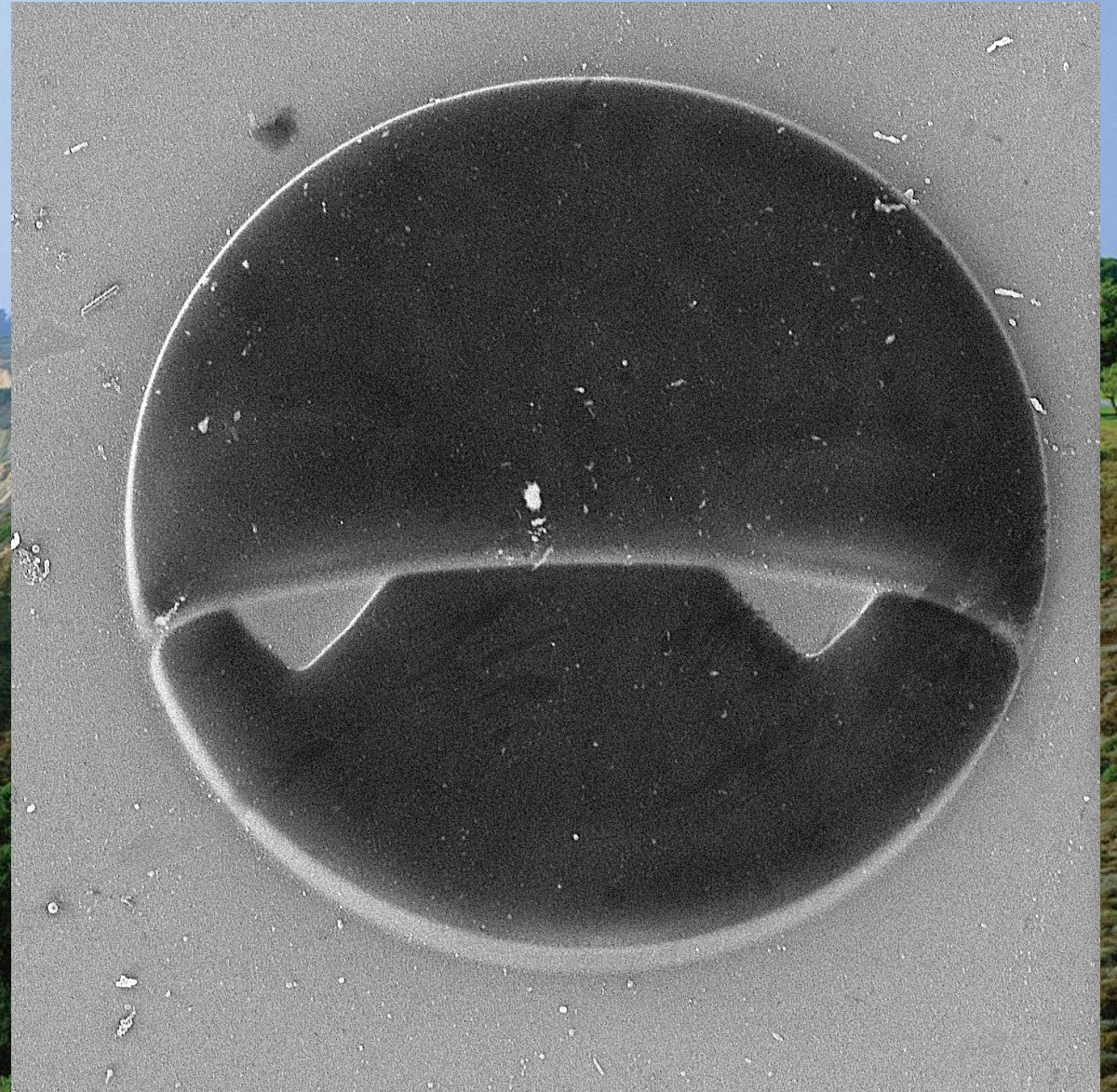
Image Details:

Orig. Mag: 4x5, 10kX

Instrument: : ZEISS Orion NanoFab


Submitted By: Sherry Mo

Affiliation: University of California, Berkeley



Sponsored by:



	GFIS Field Of View 11 Microns	1 μ m	Scan Number Averages 8	Working Distance 9.206 Millimeters
	Beam Current 2.9 pA	Scan Dwell Time 1 μ s	Scan Size 2048 x 2048	Acquisition Timestamp 5/13/2024 4:17:13 PM



MicroGraph Title: Pastoral Landscape

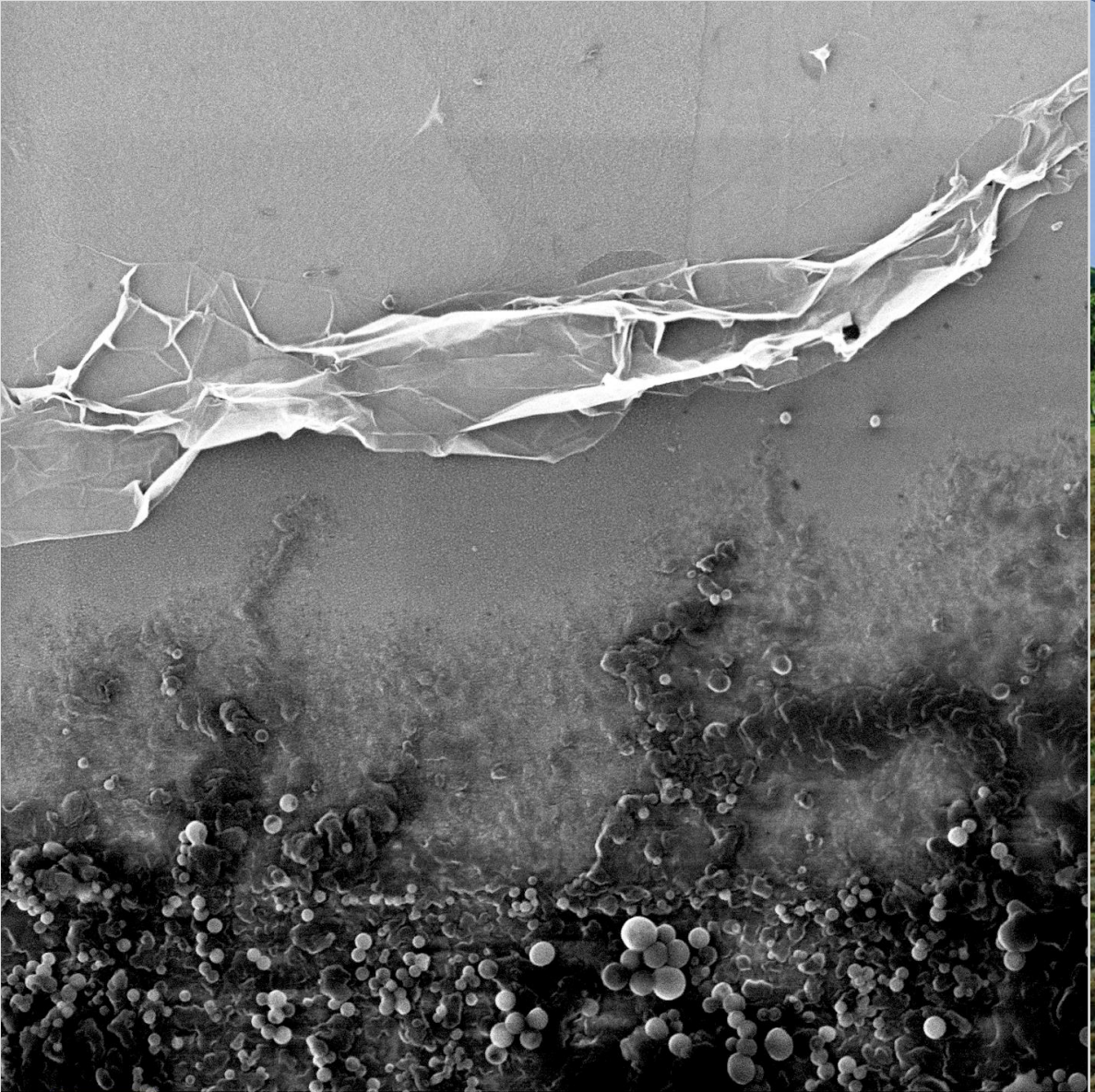
Description: Melted gallium bubbling and blooming in full force. HIM micrograph

Image Details:

Orig. Mag: 4x5, 10kX
 Instrument: : ZEISS Orion NanoFab
 Submitted By: Sherry Mo
 Affiliation: University of California, Berkeley



Sponsored by:



	GFIS Field Of View 8 Microns	 1 μ m	Scan Number Averages 8	Working Distance 9.185 Millimeters
	Beam Current 2.99 pA	Scan Dwell Time 1 μ s	Scan Size 2048 x 2048	Acquisition Timestamp 5/13/2024 4:19:13 PM



Cosmic Clash

A differential interference contrast (DIC) photon micrograph captures a real-color mosaic in a thin film of low-density polyethylene (LDPE), hot spin-coated onto a silicon wafer. Optical interference in the plastic microstructure creates a cosmic clash from science fiction: arcing blasts of film thickness variation; bracing shields of semi-crystalline spherulite boundaries; and radiating explosions of spherulite nucleation centers.

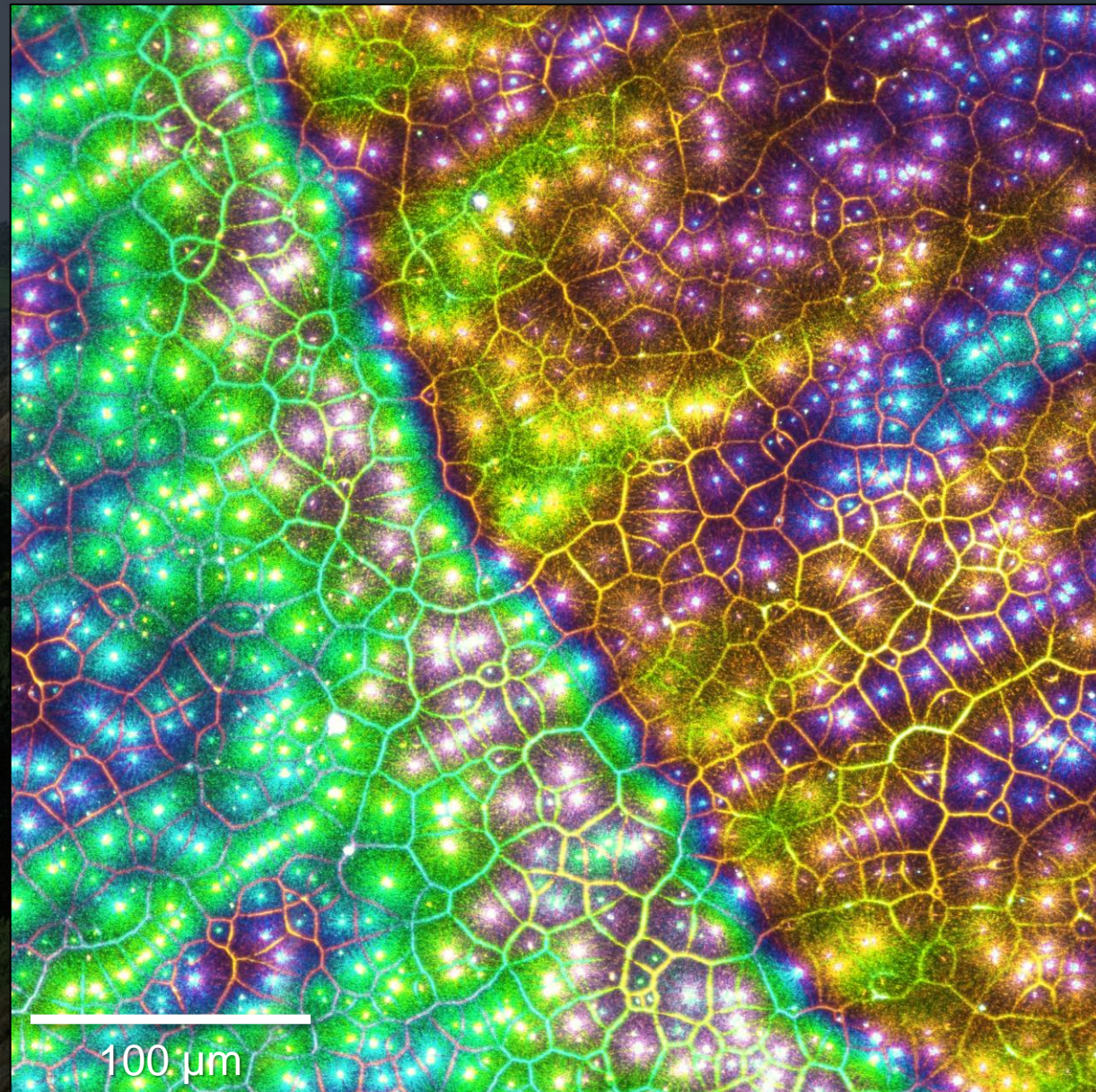
Magnification: 10×

Instrument: Nikon L200*

Submitted by: Sandra Gutierrez Razo, Andrew C. Madison, Daron A. Westly, and Samuel M. Stavis

Affiliation: National Institute of Standards and Technology (NIST)

*The identification of a commercial product is for specification only and does not imply recommendation



MicroGraph Title: Cactus Colloids

Description: Caught in a prickly spot? Never fear; all closed-packed and covered in spikes, these microbeads have it worse than you. Subject to the indignity of serving as a test substrate for a new 3D micropatterning process, they were covered with liquid-sugar and disfigured (a.k.a transfer printed) with arrays of microscopic cones. (Image taken after the sugar is washed off). For scale, microspheres are $\sim 7\mu\text{m}$ in diameter; spikes/cones are $\sim 900\text{ nm}$ tall.

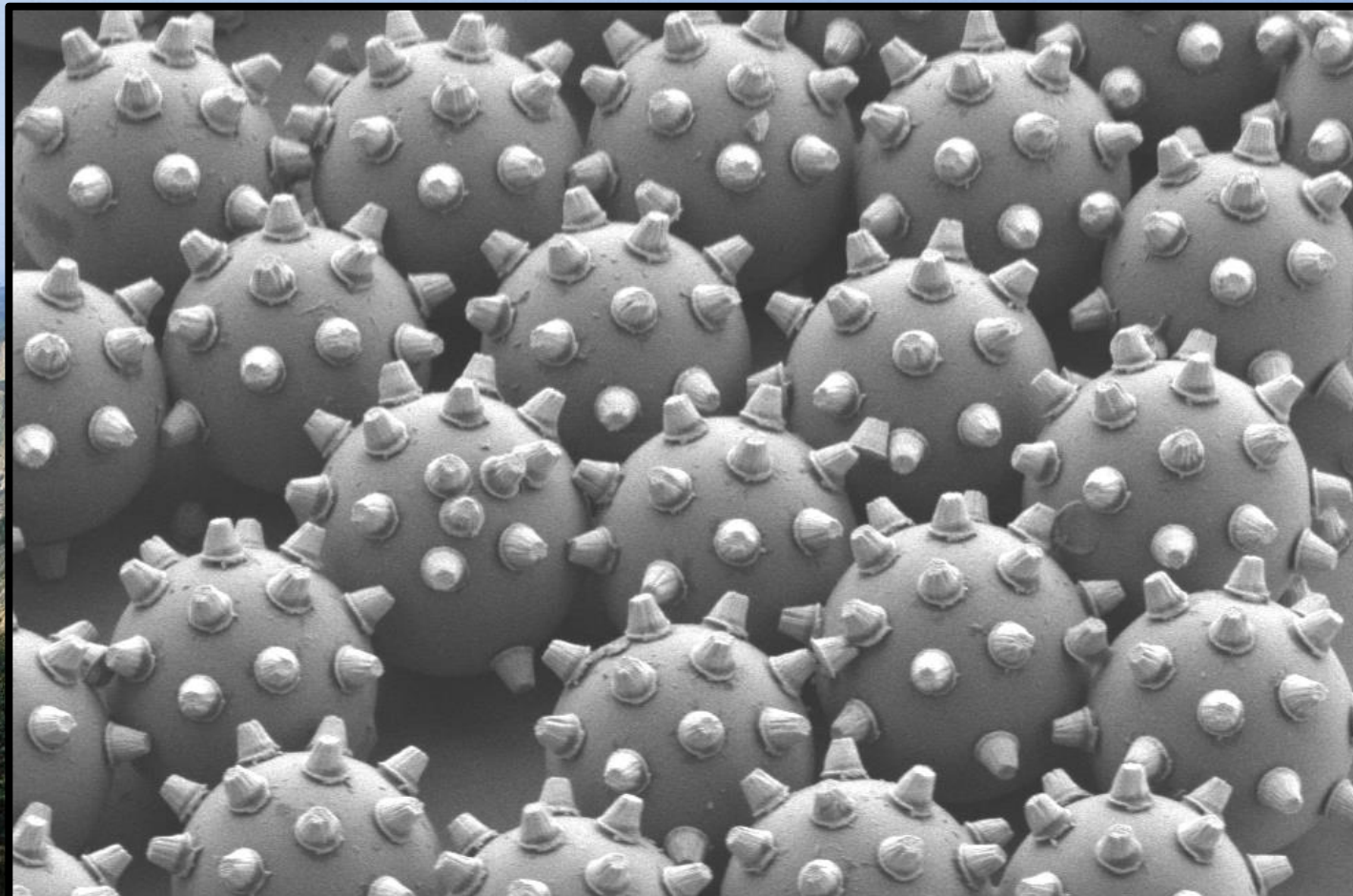
Image Details:

Orig. Mag: (3" x 4" image): 3kX

Instrument: Zeiss Sigma 300

Submitted By: Gary Zabow

Affiliation: NIST



Sponsored by:



MicroGraph Title: Arrays of Adatoms

Description: Oxygen adatoms on a $\text{Fe}_3\text{O}_4/\text{Fe}_2\text{O}_3(0001)$ surface

Image Details:

Orig. Mag: (3" x 4" image): 3387 kX

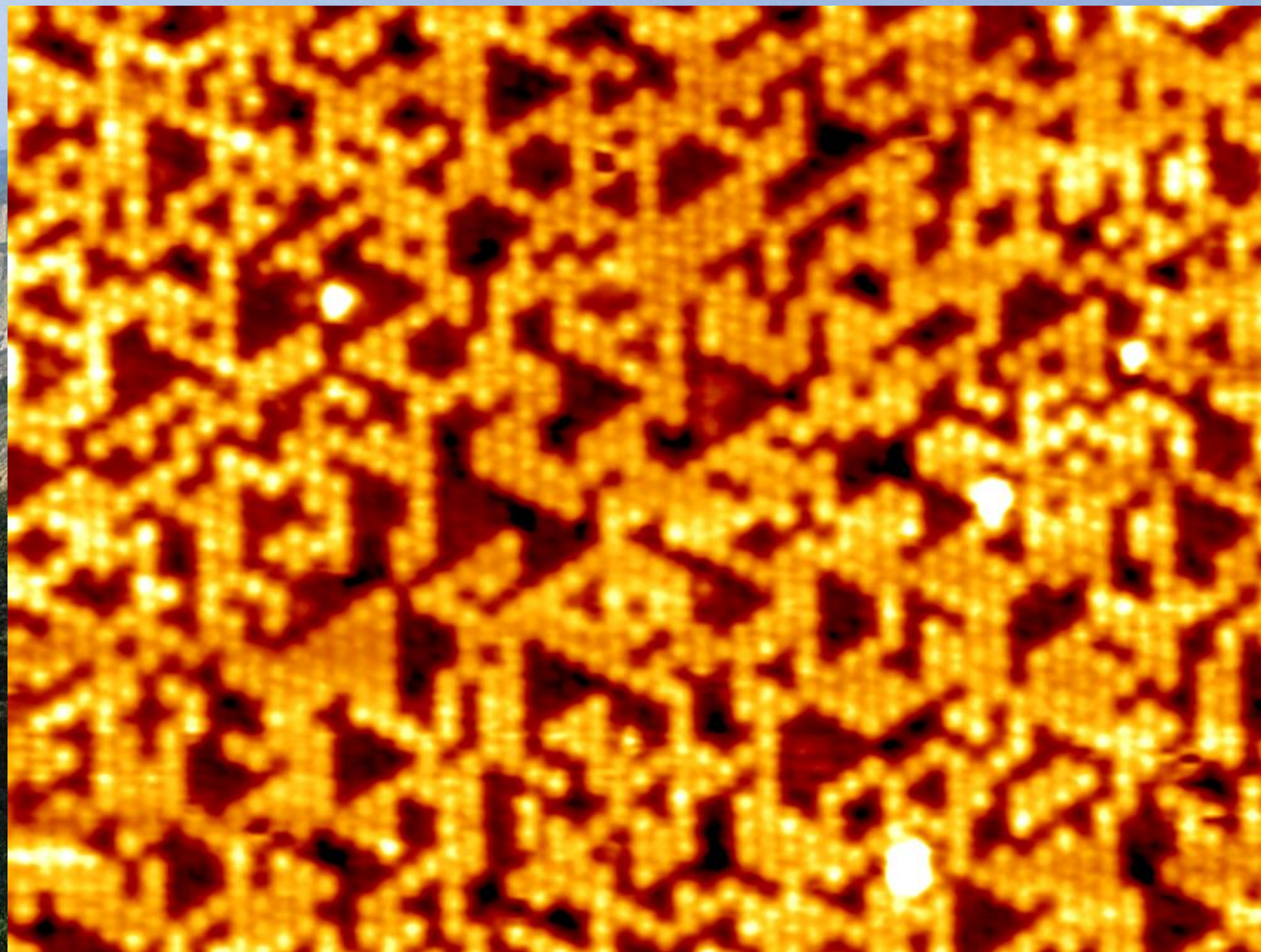
Instrument: : Omicron, Variable

Temperature-Scanning Tunneling Microscope

Submitted By: Fang Xu

Affiliation: the University of Texas at San Antonio

Sponsored by:



MicroGraph Title: Micro-Trees

Description: Beam induced growth on an Ag/NaNO₃/MgCO₃ nanostructure.

Image Details:

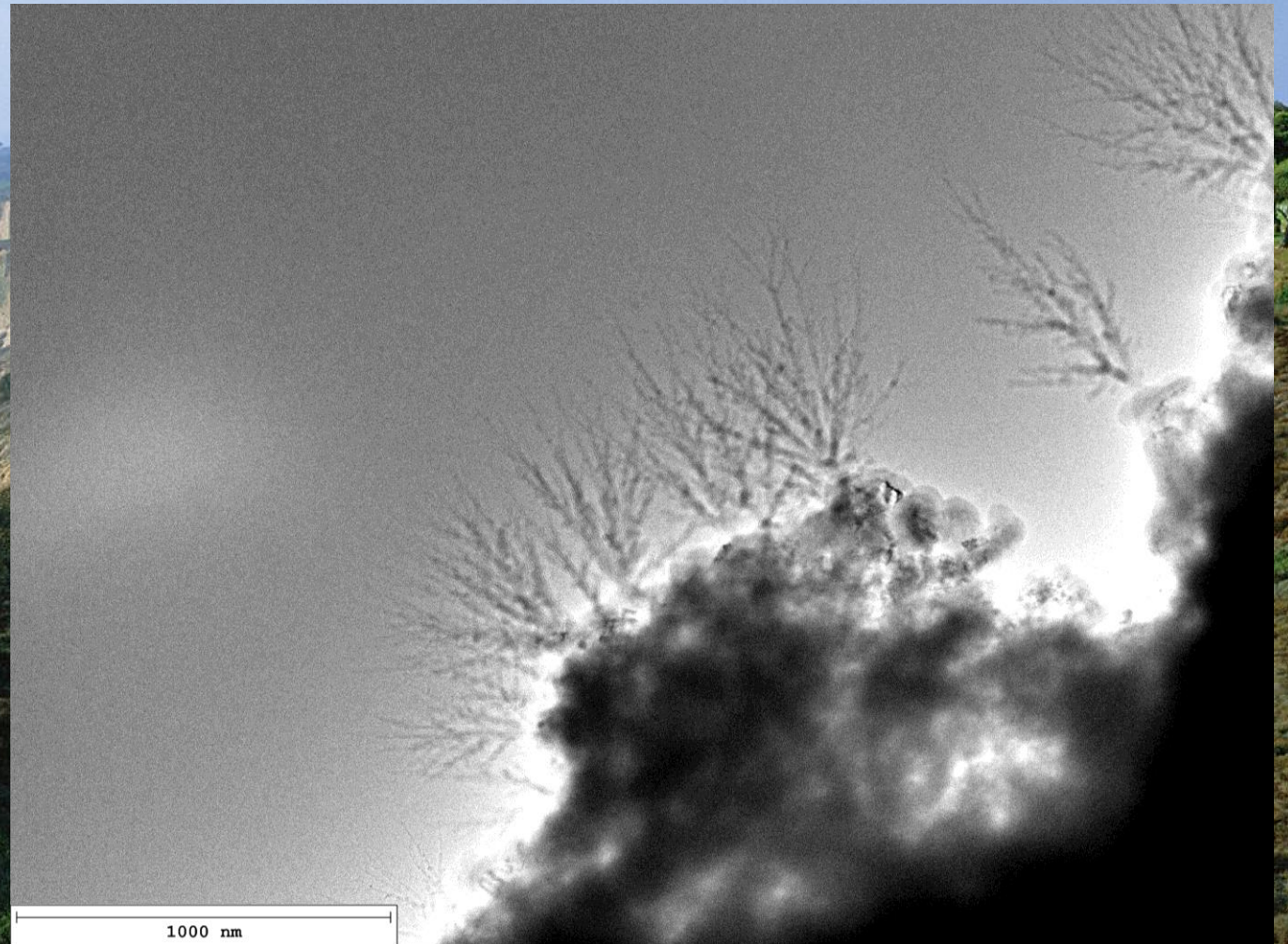
Orig. Mag: (3" x 4" image): 2.67 kX

Instrument: : JOEL JEM-2010 F Transmission Electron Microscope

Submitted By: Fang Xu

Affiliation: the University of Texas at San Antonio

Sponsored by:



MicroGraph Title: Hidden crab

Description: Fuel cell tested Ni-BZY anode

Image Details:

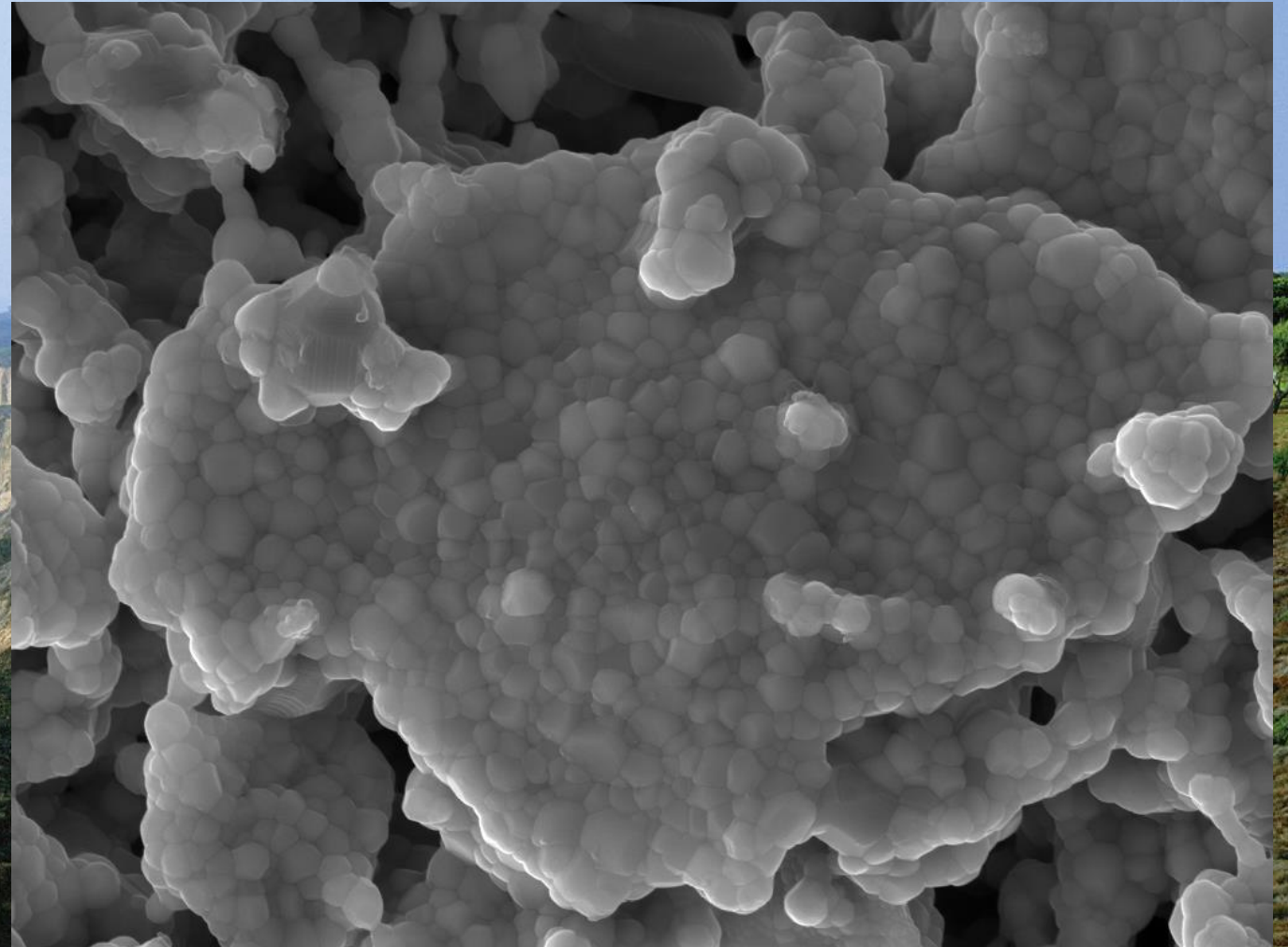
Orig. Mag: 20kx

Instrument: : Tescan Mira 3

Submitted By: Amos Taiswa

Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by:



SEM HV: 15.0 kV	WD: 13.22 mm		MIRA3 TESCAN
View field: 13.9 µm	Det: SE	2 µm	
SEM MAG: 20.0 kx	Date(m/d/y): 05/21/24		
ceramic (P)-20kx			

MicroGraph Title: Hidden Faces

Description: Ni nanoparticles on a tested fuel cell anode

Image Details:

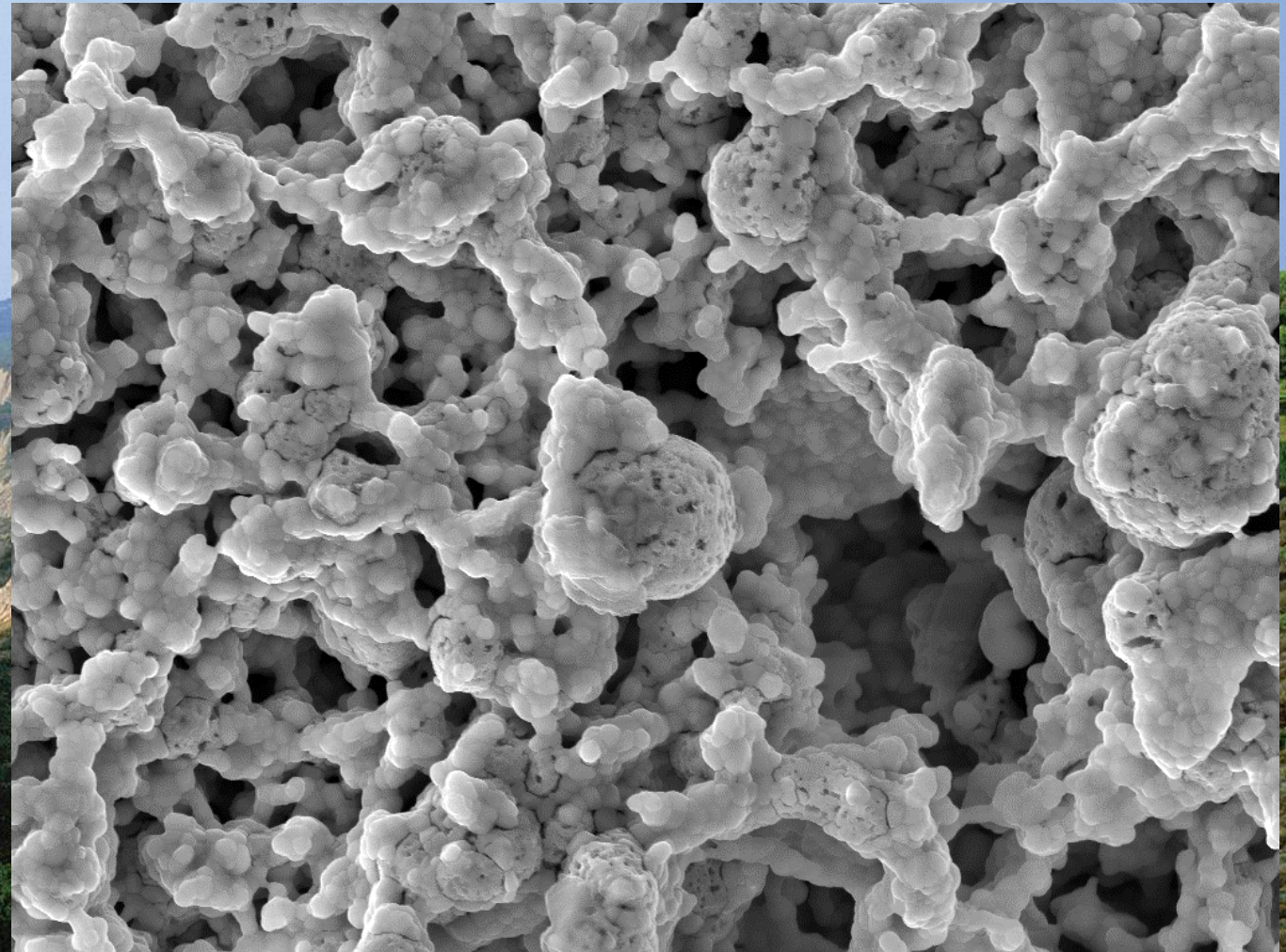
Orig. Mag: 10kx

Instrument: : Tescan Mira 3

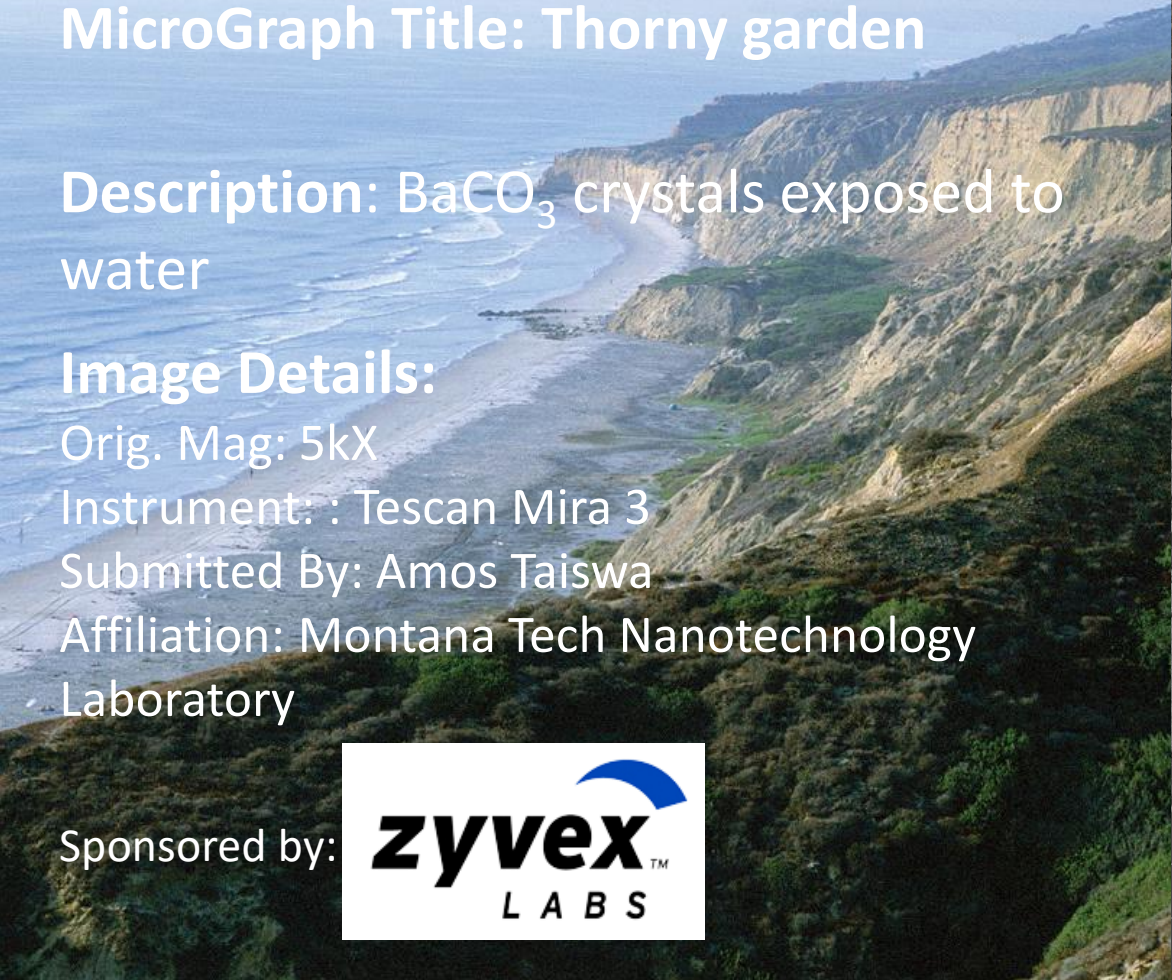
Submitted By: Amos Taiswa

Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by:



SEM HV: 15.0 kV	WD: 13.06 mm	MIRA3 TESCAN
View field: 27.7 μ m	Det: SE	5 μ m
SEM MAG: 10.0 kx	Date(m/d/y): 05/21/24	
ceramic (T)-10kx		



MicroGraph Title: Thorny garden

Description: BaCO₃ crystals exposed to water


Image Details:

Orig. Mag: 5kX
 Instrument: : Tescan Mira 3
 Submitted By: Amos Taiswa
 Affiliation: Montana Tech Nanotechnology Laboratory



Sponsored by:



SEM HV: 20.0 kV	WD: 13.54 mm		MIRA3 TESCAN
View field: 55.4 μm	Det: SE	10 μm	
SEM MAG: 5.00 kx	Date(m/d/y): 07/18/23		

MicroGraph Title: Loom of Loki

Description: Aligned PCL fiber patterns from an electrode edge

Image Details:

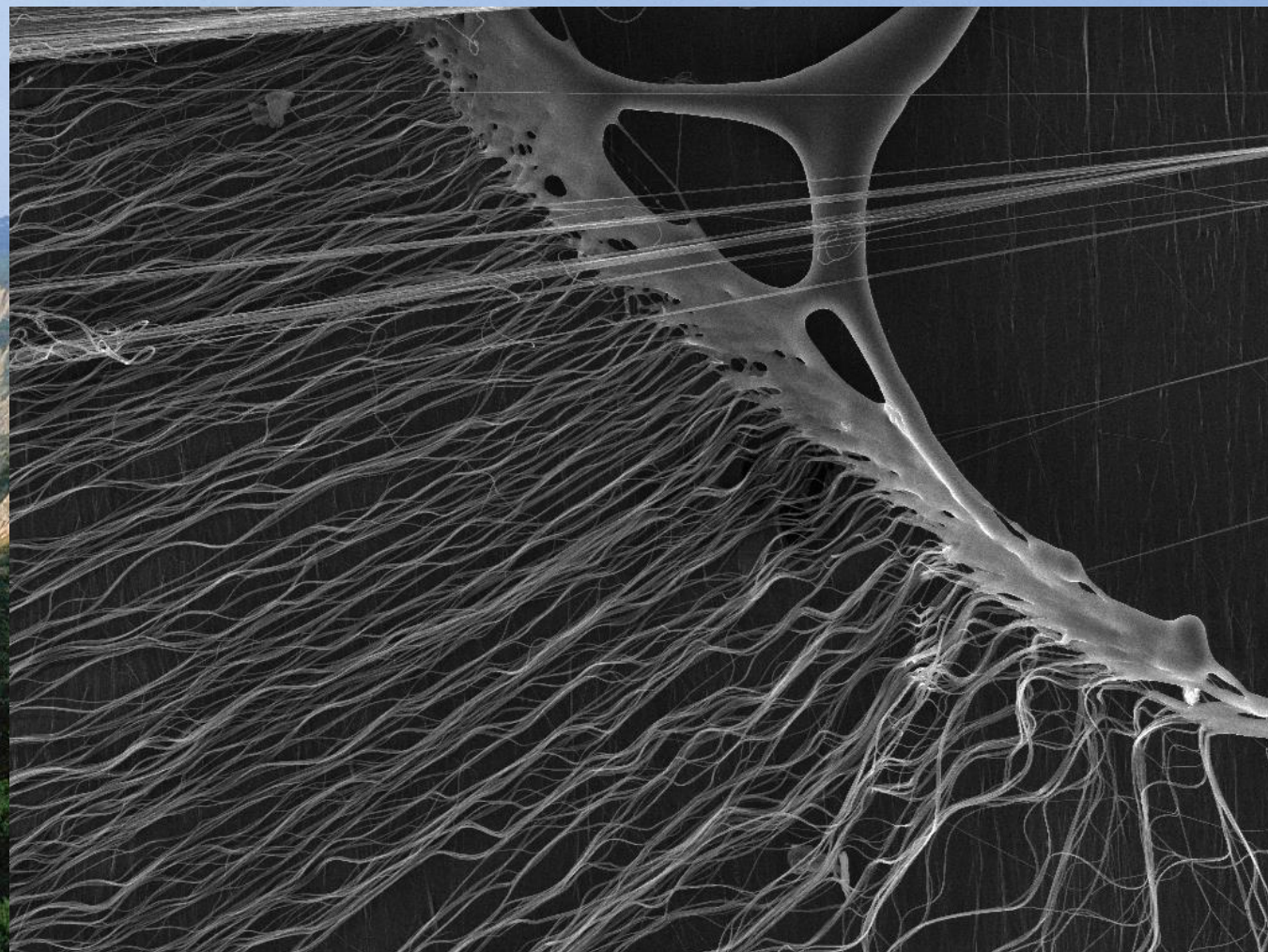
Orig. Mag: 609 X

Instrument: : Hitachi S-4500

Submitted By: Amos Taiswa

Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by:



SEM HV: 20.0 kV

WD: 15.08 mm

View field: 455 μ m

Det: SE

SEM MAG: 609 x

Date(m/d/y): 02/15/24

100 μ m

MIRA3 TESCAN



MicroGraph Title: The Curtain

Description: Scratched PMMA coating

Image Details:

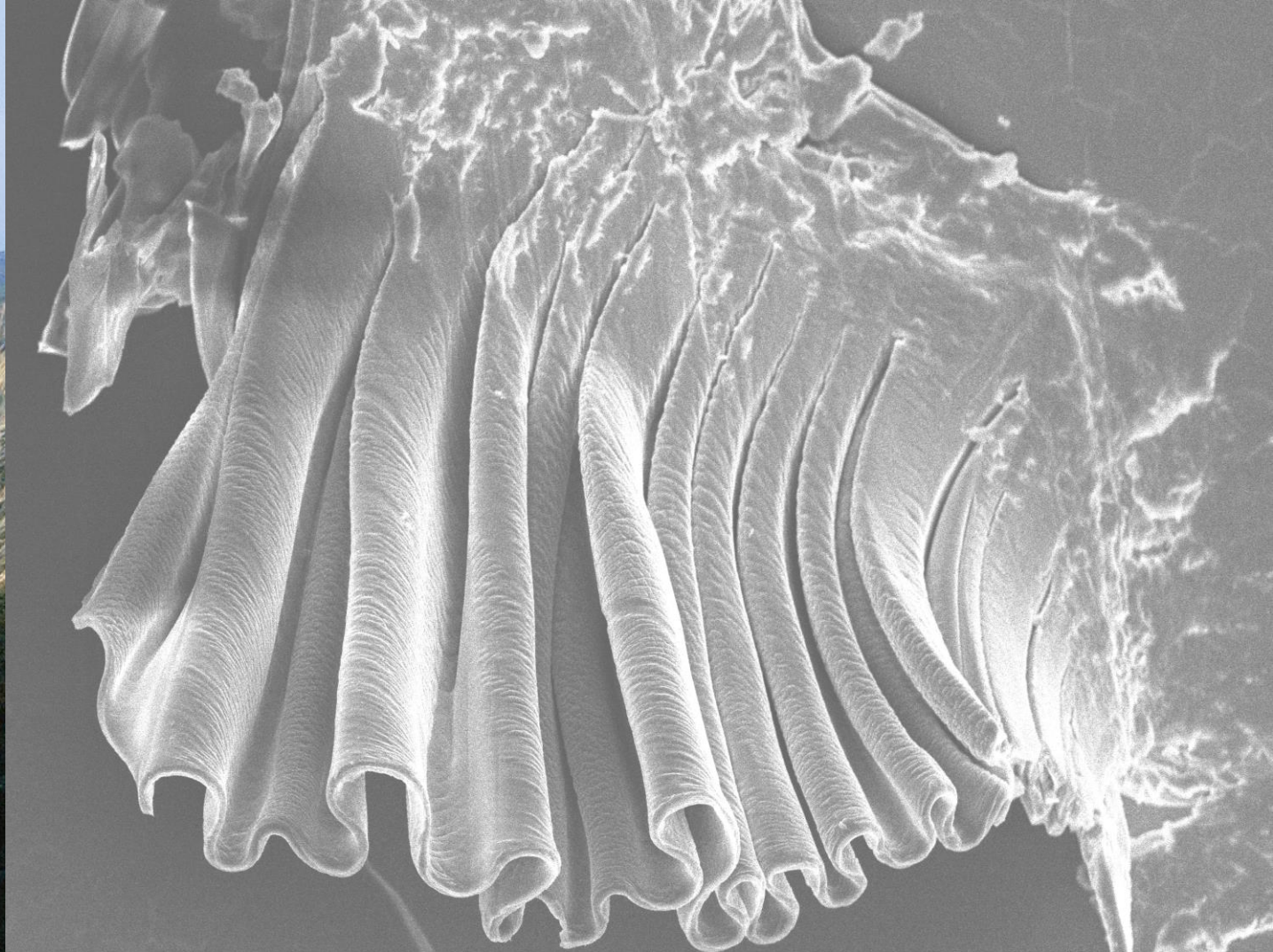
Orig. Mag: (3" x 4" image): 1.5kX


Instrument: : Thermo Fisher Apreo SEM

Submitted By: Jing Guo

Affiliation: Rice University SEA

Sponsored by:



	HFW	use case	det HV	curr	WD	mag	11/14/2023	dwell	pressure	10 μm	
	84.7 μm	OptiPlan	T2	5.00 kV	25 pA	11.1 mm	1 500 x	3:24:25 PM	1.00 μs	6.54E-6 mbar	Rice University Apreo

MicroGraph Title: Micron Seahorse

Description: Cross-sectional view of silicon nanopillars where a micron seahorse appeared.

Image Details:

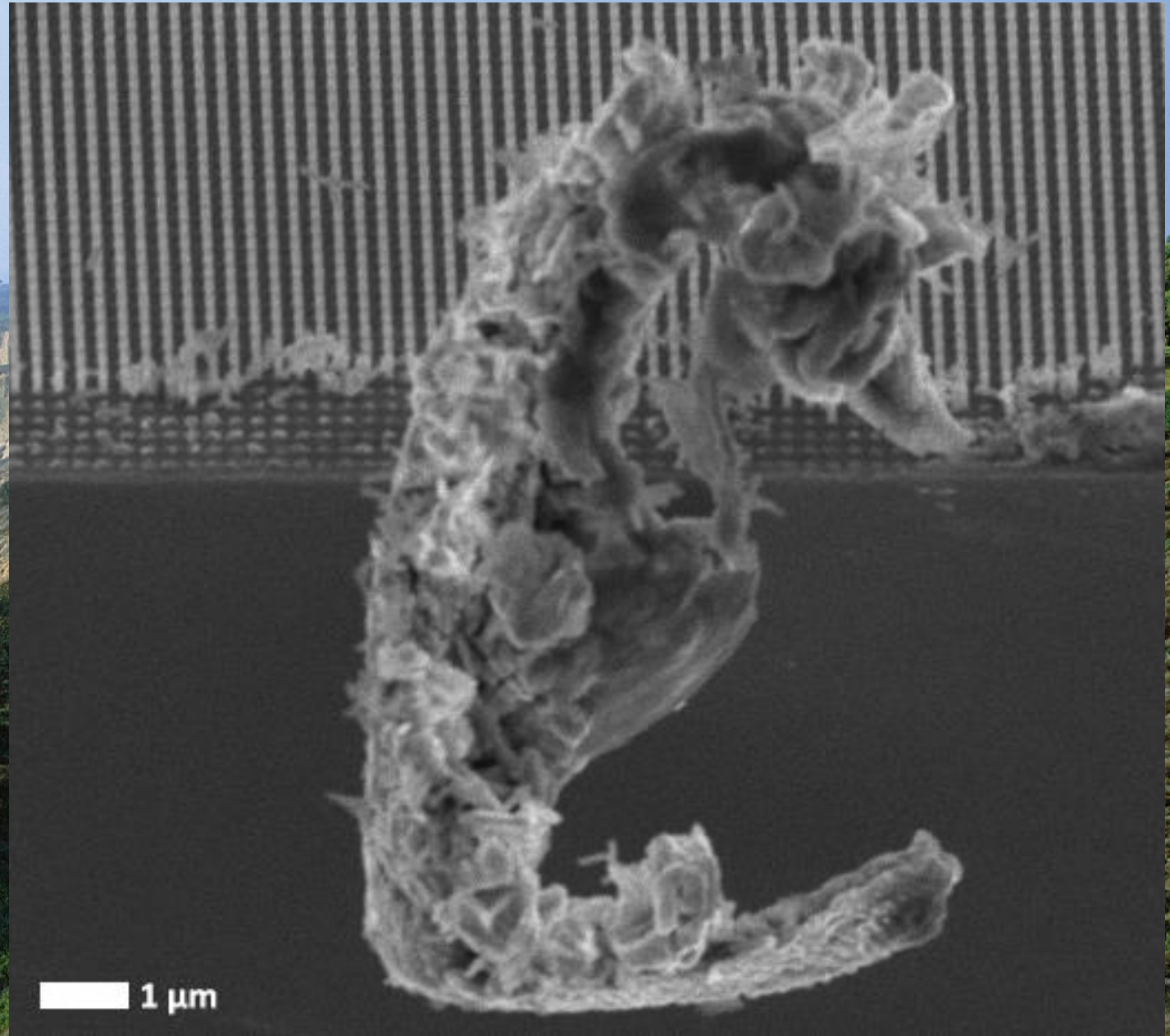
Orig. Mag: (3" x 4" image): 6969 X

Instrument: FEI, e-beam, Sirion

Submitted By: Yasser Pordeli

Affiliation: University of Twente

Sponsored by:



**MicroGraph Title: “Nano Nippers”
/ “Dung Beetle”**

Description: Cross-sectional view of silicon nanostructures after repetitive wet and dry etching

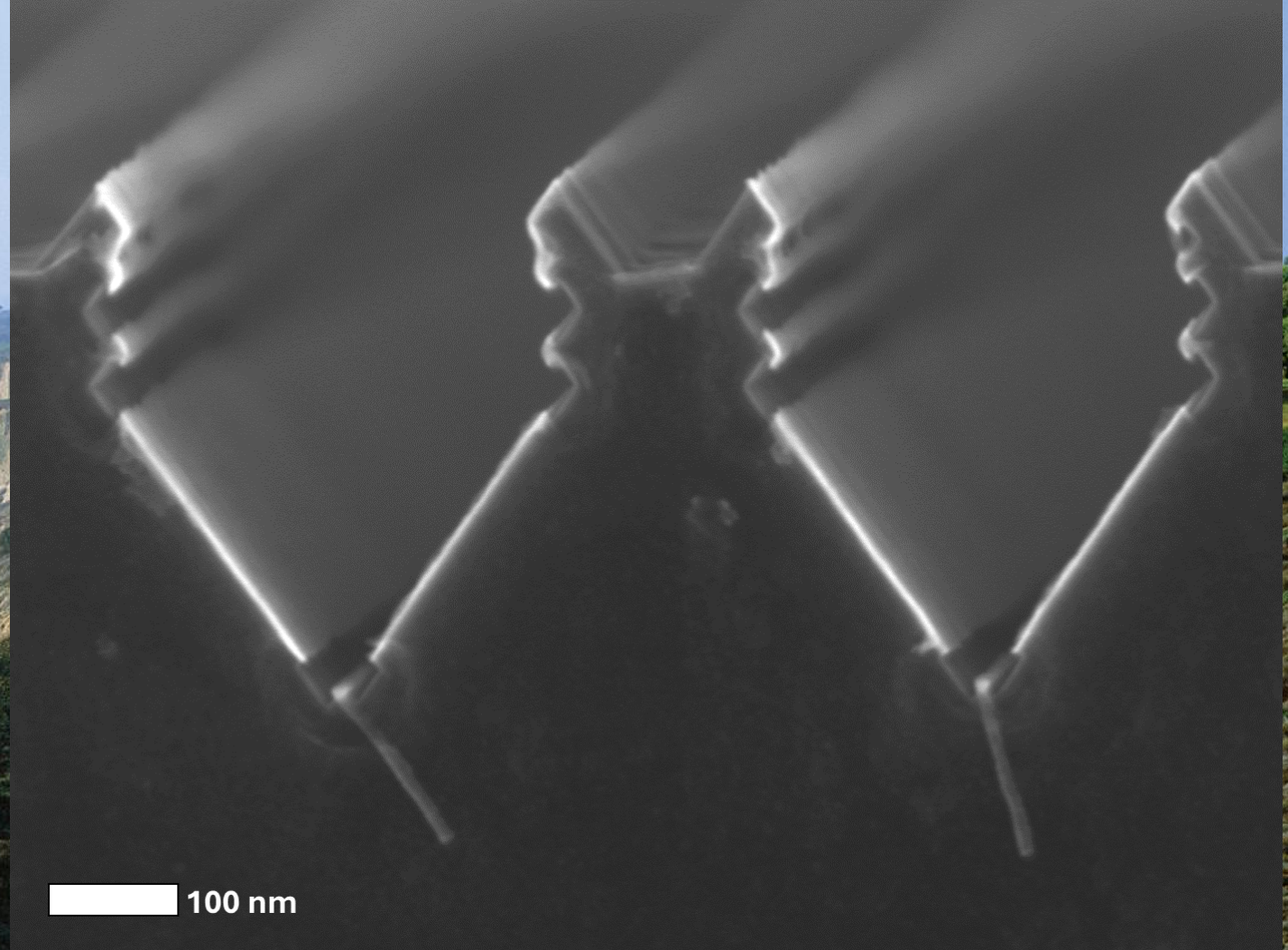
Image Details:

Orig. Mag: (3”x 4” image): 120 kX

Instrument: : Jeol, e-beam, JSM 7610FPlus

Submitted By: Yasser Pordeli

Affiliation: University of Twente



Sponsored by:



**MicroGraph Title: “Nano Nipper”
/ “Dung Beetle”**

Description: Cross-sectional view of silicon nanostructures after repetitive wet and dry etching

Image Details:

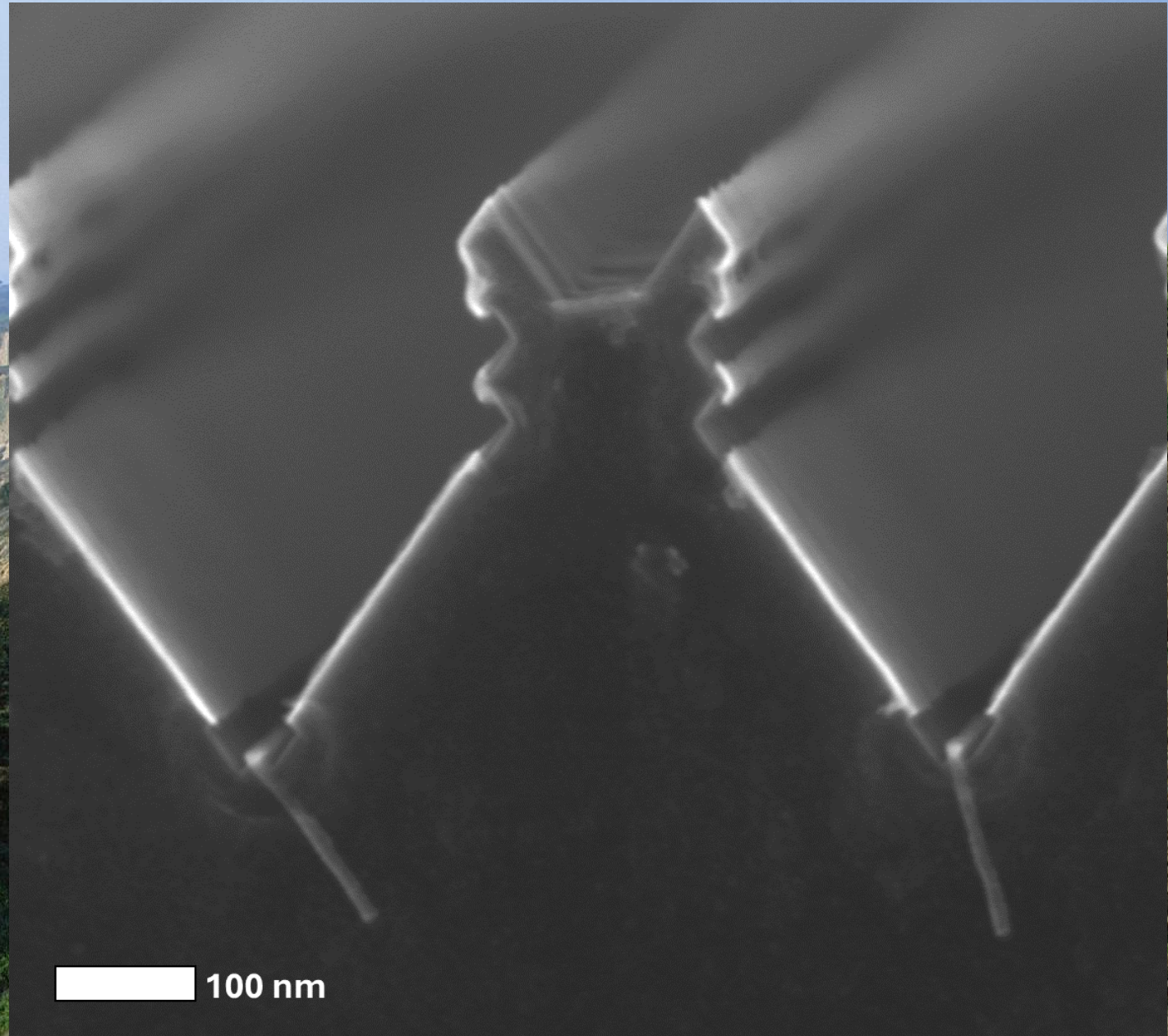
Orig. Mag: (3”x 4” image): 120 kX

Instrument: : Jeol, e-beam, JSM 7610FPlus

Submitted By: Yasser Pordeli

Affiliation: University of Twente

Sponsored by:



MicroGraph Title: Field of Swords

Description: Perovskite materials precipitated on a thin film TiO₂ substrate by a drop casting technique.

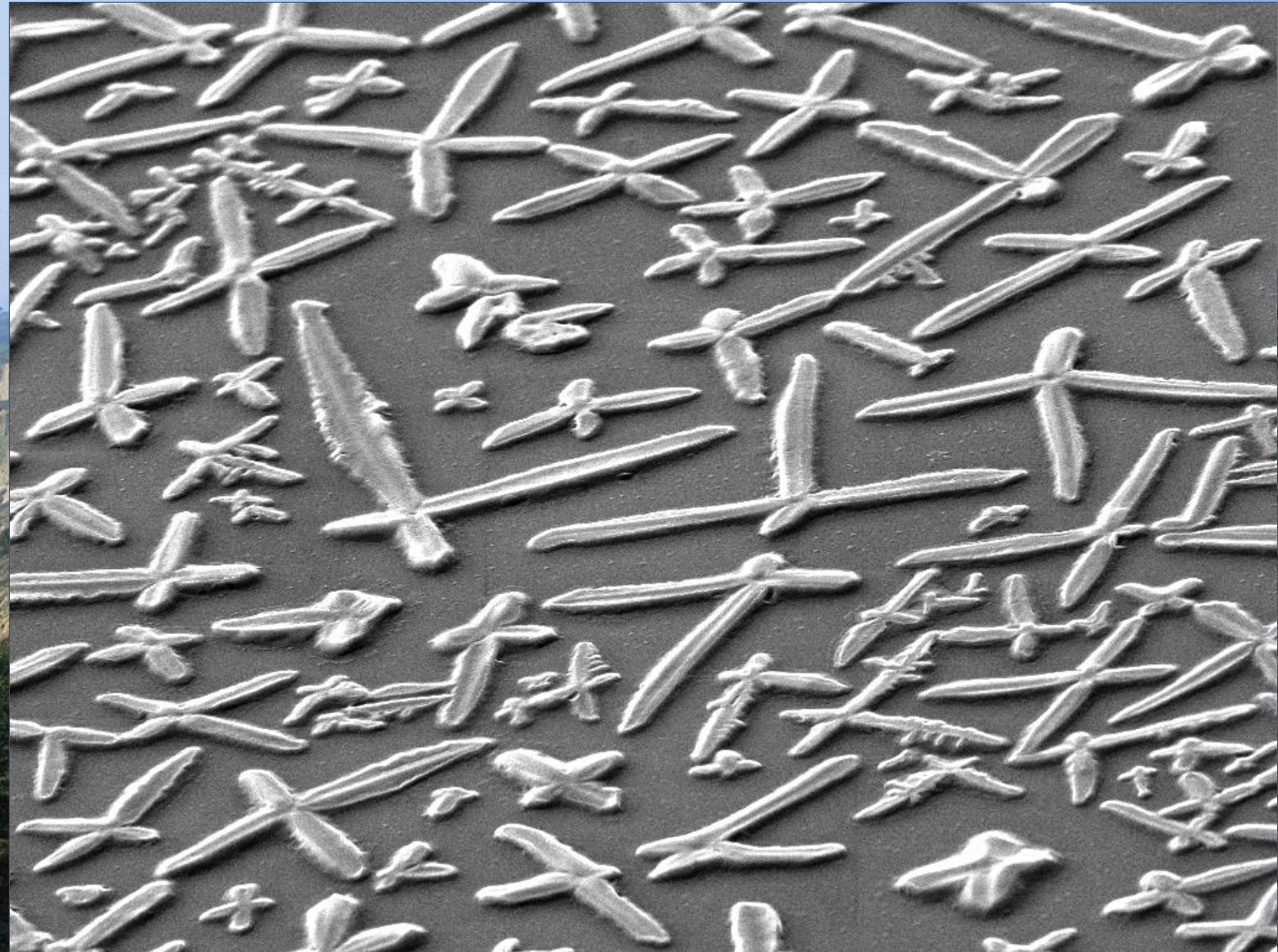
Image Details:

Orig. Mag: 2.73 kx

Instrument: : TESCAN MIRA 3 SEM

Submitted By: Xavier T. Vorhies

Affiliation: Montana Tech Nanotechnology Laboratory



SEM HV: 20.0 kV

WD: 23.84 mm

View field: 101 µm

Det: SE

SEM MAG: 2.73 kx

Date(m/d/y): 04/18/23

20 µm

MIRA3 TESCAN

Sponsored by:



MicroGraph Title: WALL-E's Broken Friends

Description: Perovskite materials precipitated on a thin film TiO₂ substrate by a drop casting technique.

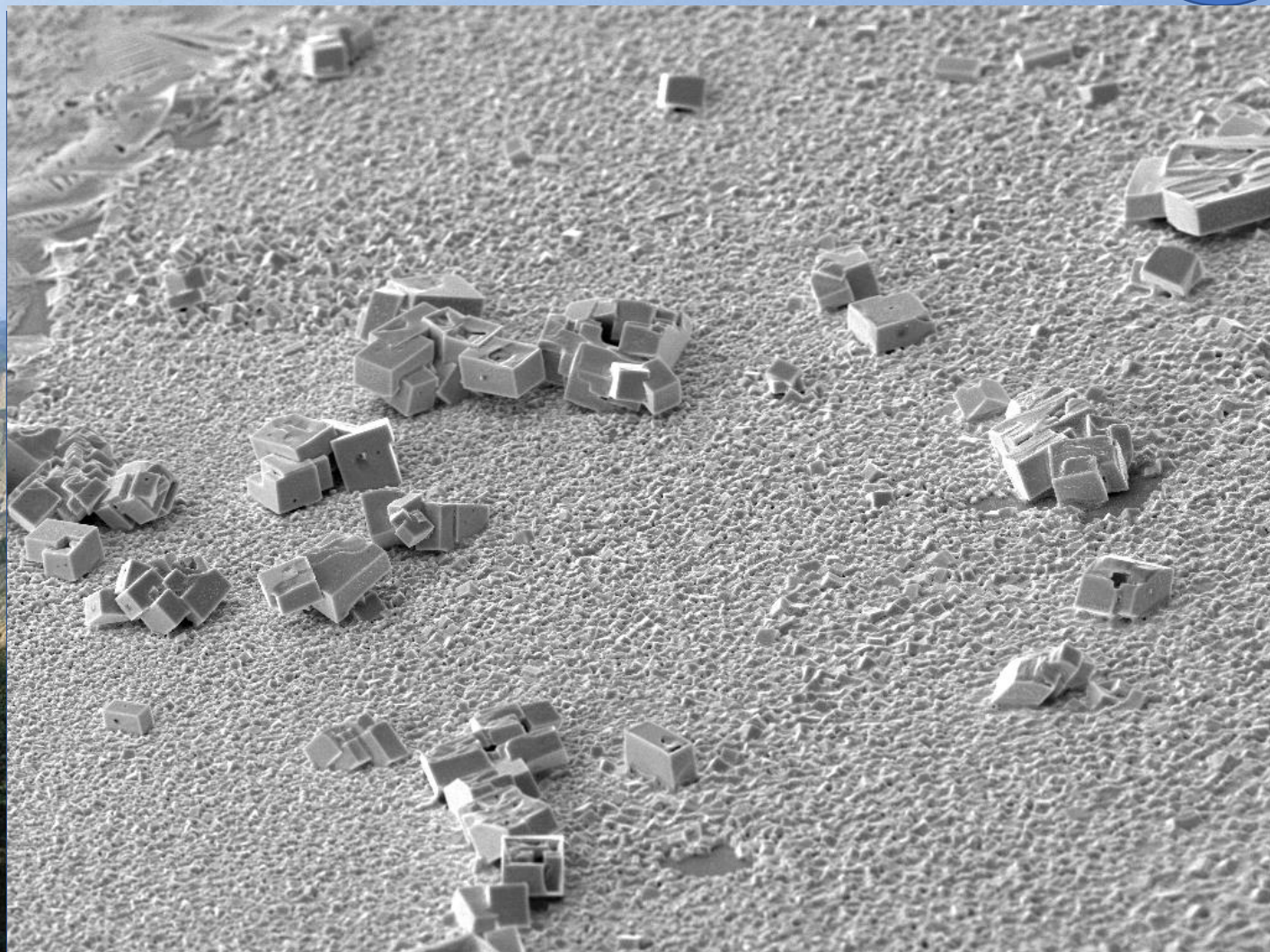
Image Details:

Orig. Mag: (3"x 4" image): 613 x

Instrument: : TESCAN MIRA 3 SEM

Submitted By: Xavier T. Vorhies

Affiliation: Montana Tech Nanotechnology Laboratory



SEM HV: 20.0 kV	WD: 20.32 mm	MIRA3 TESCAN
View field: 452 µm	Det: SE	100 µm
SEM MAG: 613 x	Date(m/d/y): 04/19/23	

Sponsored by:



MicroGraph Title: Forbidden Cheez-It

Description: Perovskite materials precipitated on a thin film TiO_2 substrate by a drop casting technique.

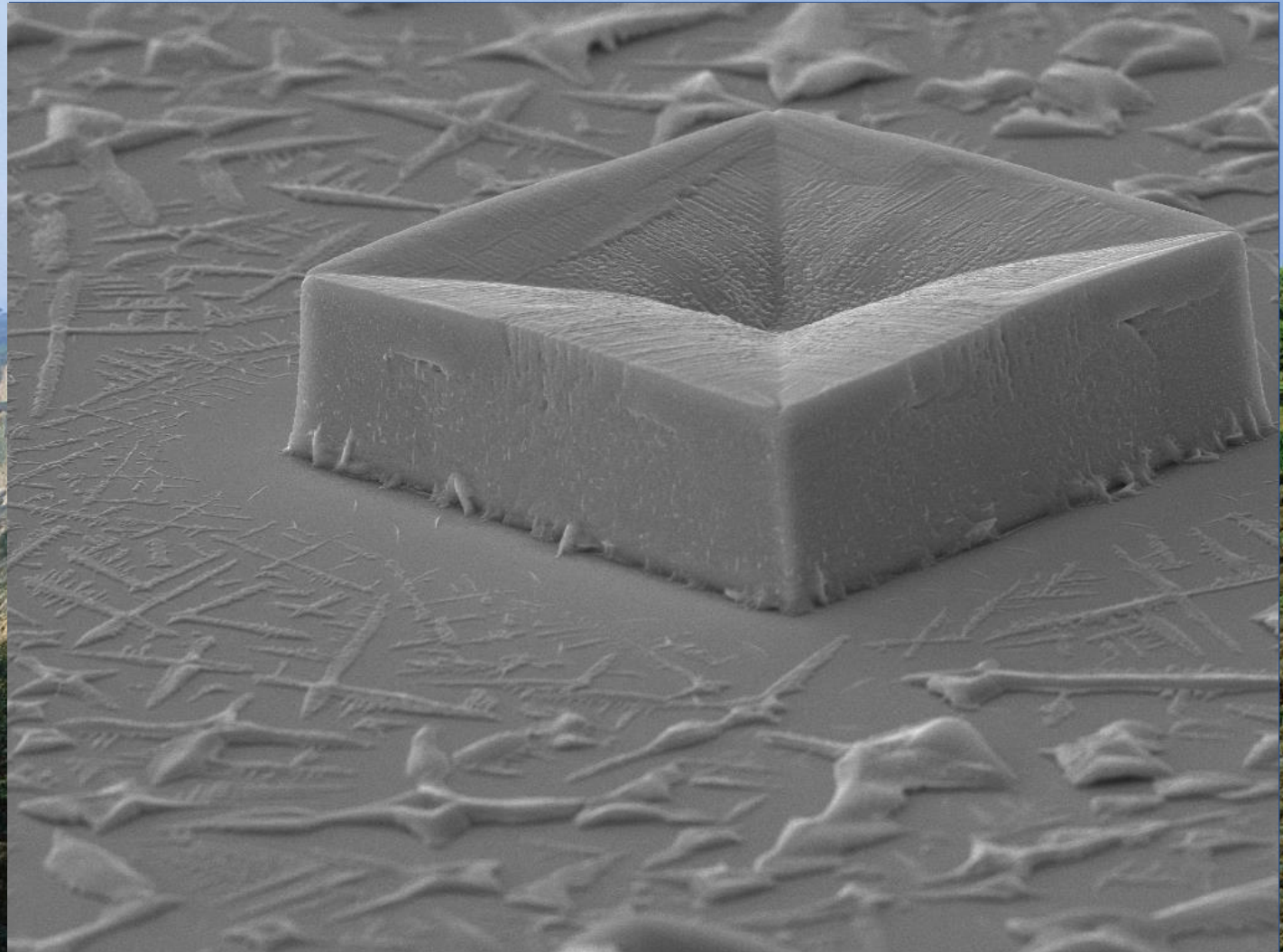
Image Details:

Orig. Mag: 3.97 kx

Instrument: : TESCAN MIRA 3 SEM

Submitted By: Xavier T. Vorhies

Affiliation: Montana Tech Nanotechnology Laboratory



SEM HV: 20.0 kV	WD: 18.03 mm	 20 μm	MIRA3 TESCAN
View field: 69.8 μm	Det: SE		
SEM MAG: 3.97 kx	Date(m/d/y): 04/21/23		

Sponsored by:



MicroGraph Title: Nano Taj Mahal

Description: The smallest image of the Taj Mahal. A 20 μm -across image made using thermal scanning probe lithography.

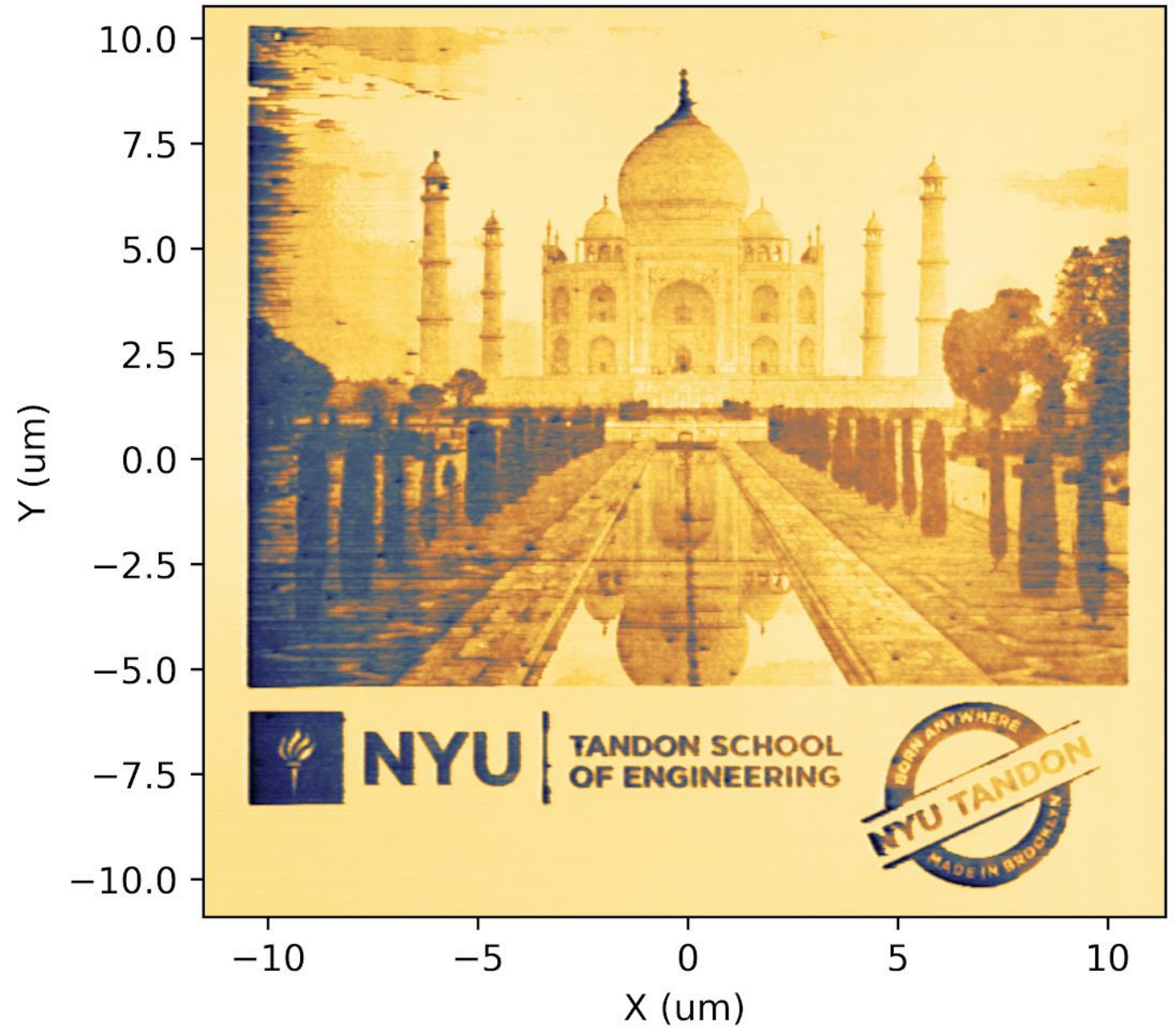
Image Details:

Orig. Mag: (3" x 4" image): 3.8kX

Instrument: : Heidelberg Instruments, NanoFrazor Explore

Submitted By: Hashem Nasralla

Affiliation: New York University



Sponsored by:



MicroGraph Title: Hearts

Description: Fish skin

Image Details:

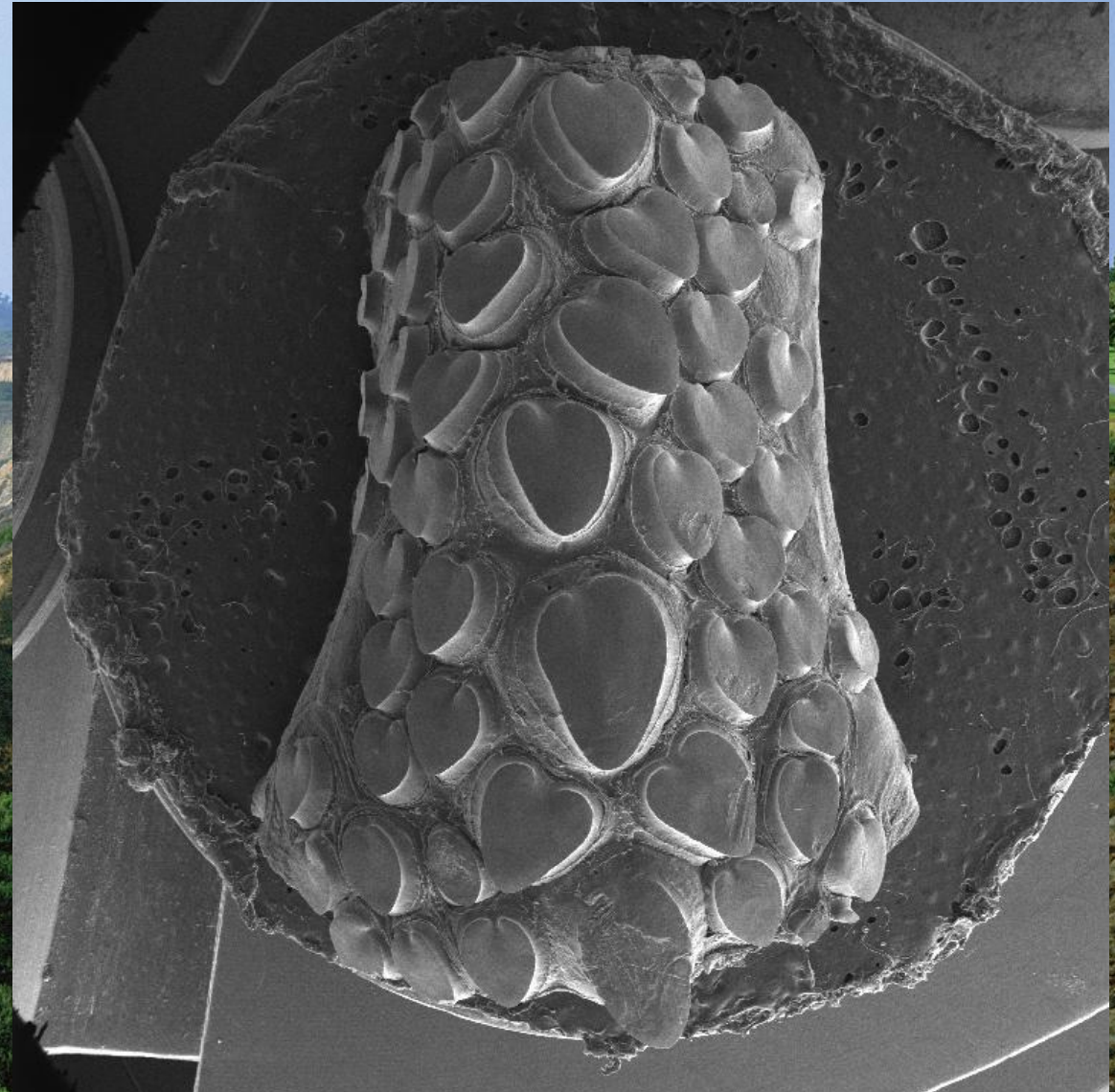
Orig. Mag: (3"x 4" image): 16 X

Instrument: : VEGA3 TESCAN

Submitted By: Shiva Pesaran

Affiliation: Central lab of Shiraz university

Sponsored by:



SEM HV: 20.0 kV

WD: 13.21 mm

View field: 11.9 mm

Det: SE

SEM MAG: 16 x

Date(m/d/y): 01/29/24

2 mm

VEGA3 TESCAN

MicroGraph Title: A baguette is basking in the California sun

Description: SIMS image of diatom showing Si distribution

Image Details:

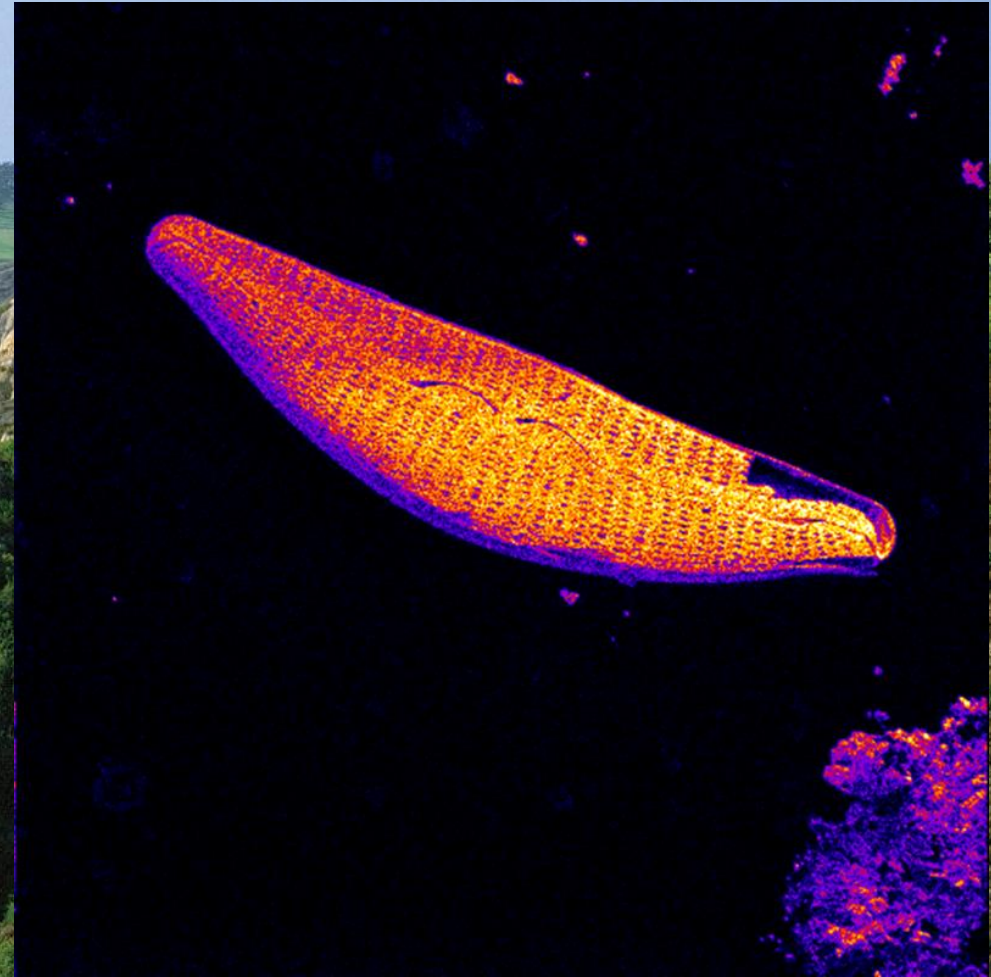
Orig. Mag: 30 μ m x 30 μ m

Instrument: : Raith IONMASTER magSIMS (Prototype)

Submitted By: Torsten Richter, Alexander Ost

Affiliation: Raith GmbH

Sponsored by:



MicroGraph Title: Connect 5

Description: 35keV Au⁺SIMS image of a Microch
Green: Ti (all isotopes), Blue: ²⁸Si + ²⁹Si + ³⁰Si

Image Details:

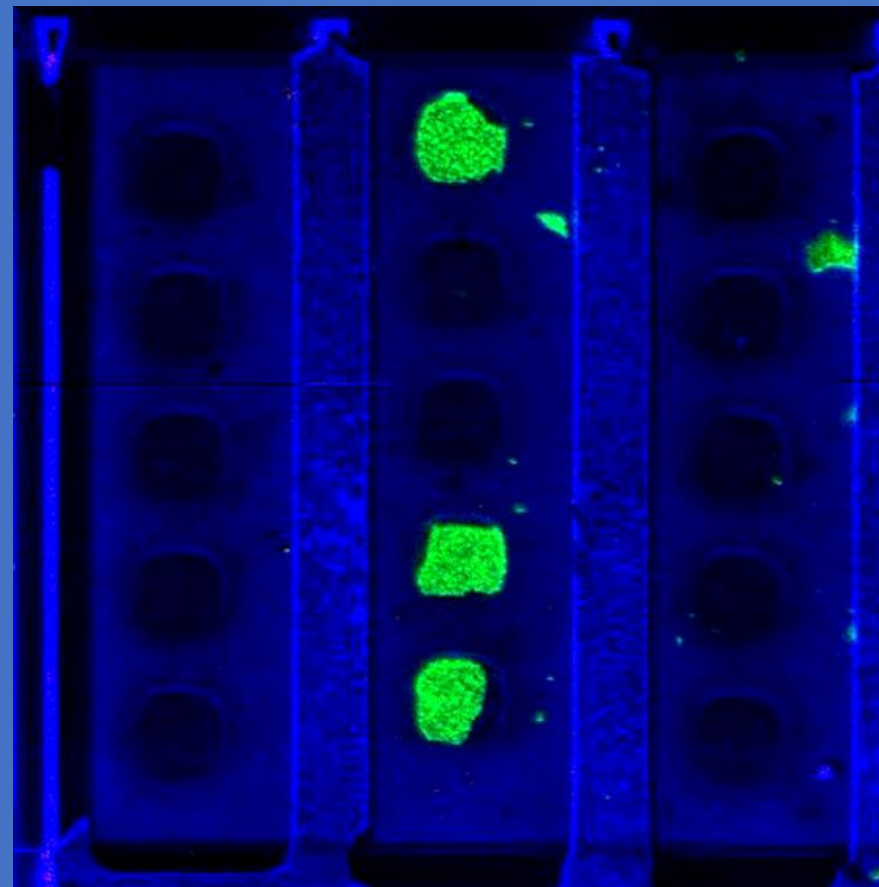
Orig. Mag: (25μm x 25μm)

Instrument: : Raith, IONMASTER magSIMS
(Prototype)

Submitted By: Peter Gnauck

Affiliation: Raith

Sponsored by:



MicroGraph Title: Sea Glass

Description: Micrograph of polished and etched AlSi10Mg created using additive manufacturing.

Image Details:

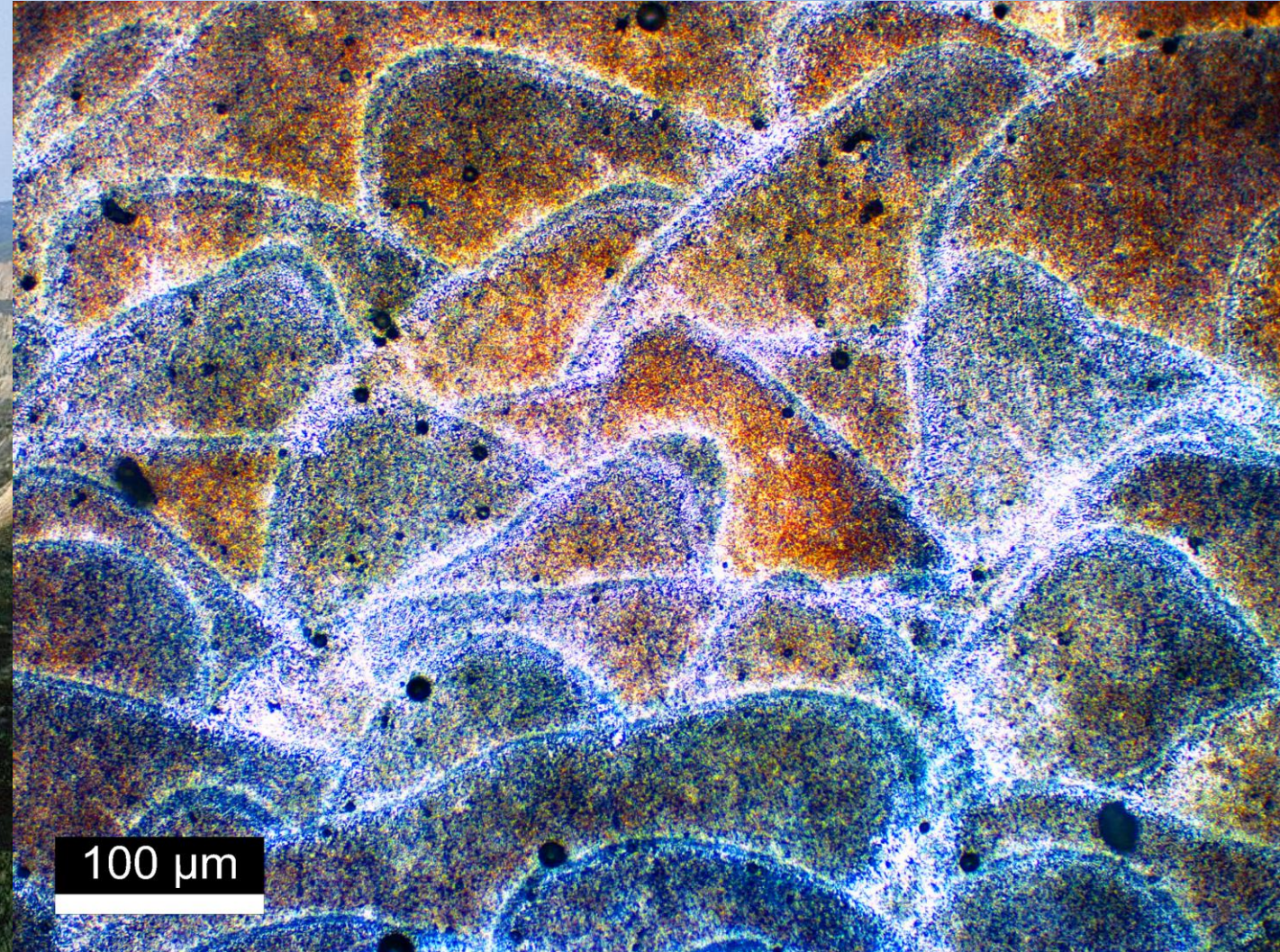
Orig. Mag: (3" x 4" image): 100X

Instrument: : LEICA DM750M

Submitted By: Luke Suttey

Affiliation: Montana Tech Nanotechnology
Laboratory

Sponsored by:



MicroGraph Title: Blast Radius

Description: Fractograph of a fatigue sample made of additively manufactured AlSi10Mg

Image Details:

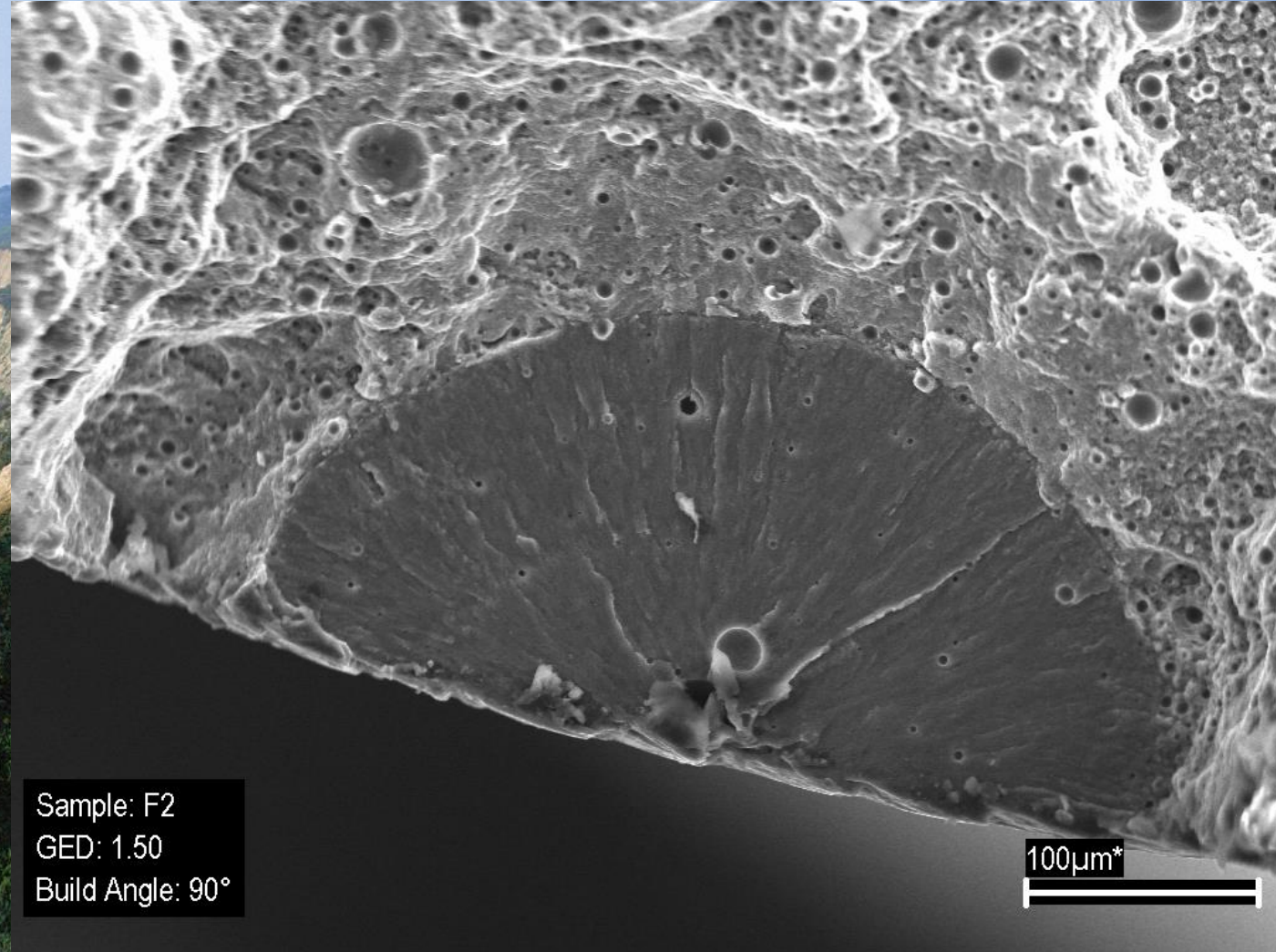
Orig. Mag: (3" x 4" image): 1kX

Instrument: : LEO 430VP scanning electron microscope

Submitted By: Luke Suttey

Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by:



MicroGraph Title: Eclipse

Description: Fractograph of a fatigue sample made of additively manufactured AlSi10Mg.

Image Details:

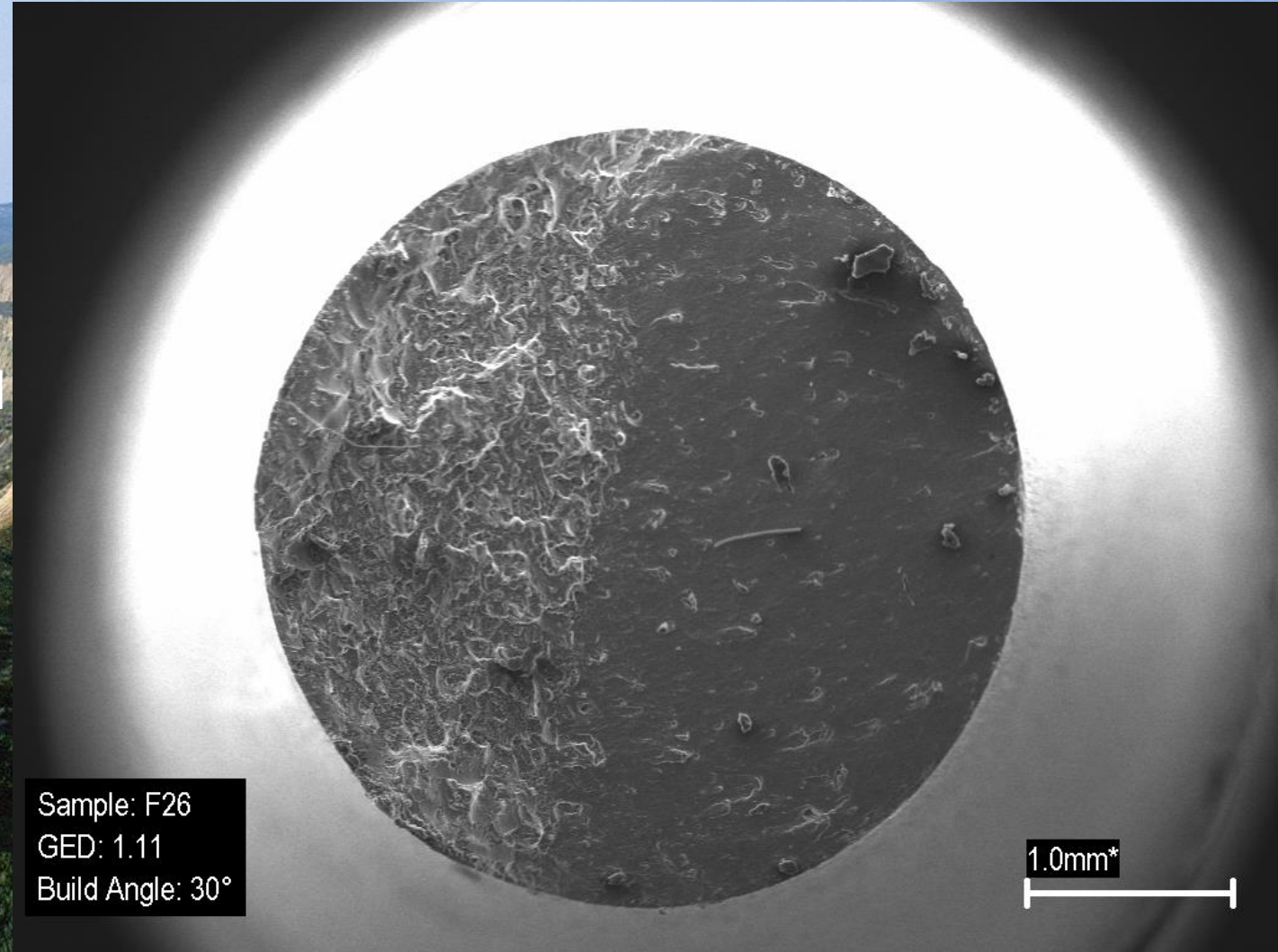
Orig. Mag: (3"x 4" image): 100X

Instrument: : LEO 430VP scanning electron microscope

Submitted By: Luke Suttey

Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by:



MicroGraph Title: Mount Doom

Description: porous glass needle emitter
for ionic liquid ion sources

Image Details:

Orig. Mag: (3" x 4" image): 300X

Instrument: : Hitachi TM4000 Tabletop SEM

Submitted By: Alexander Storey

Affiliation: University College London

Sponsored by:



TM4000 15kV 14.3mm X300 BSE M 01/11/2023

100µm

