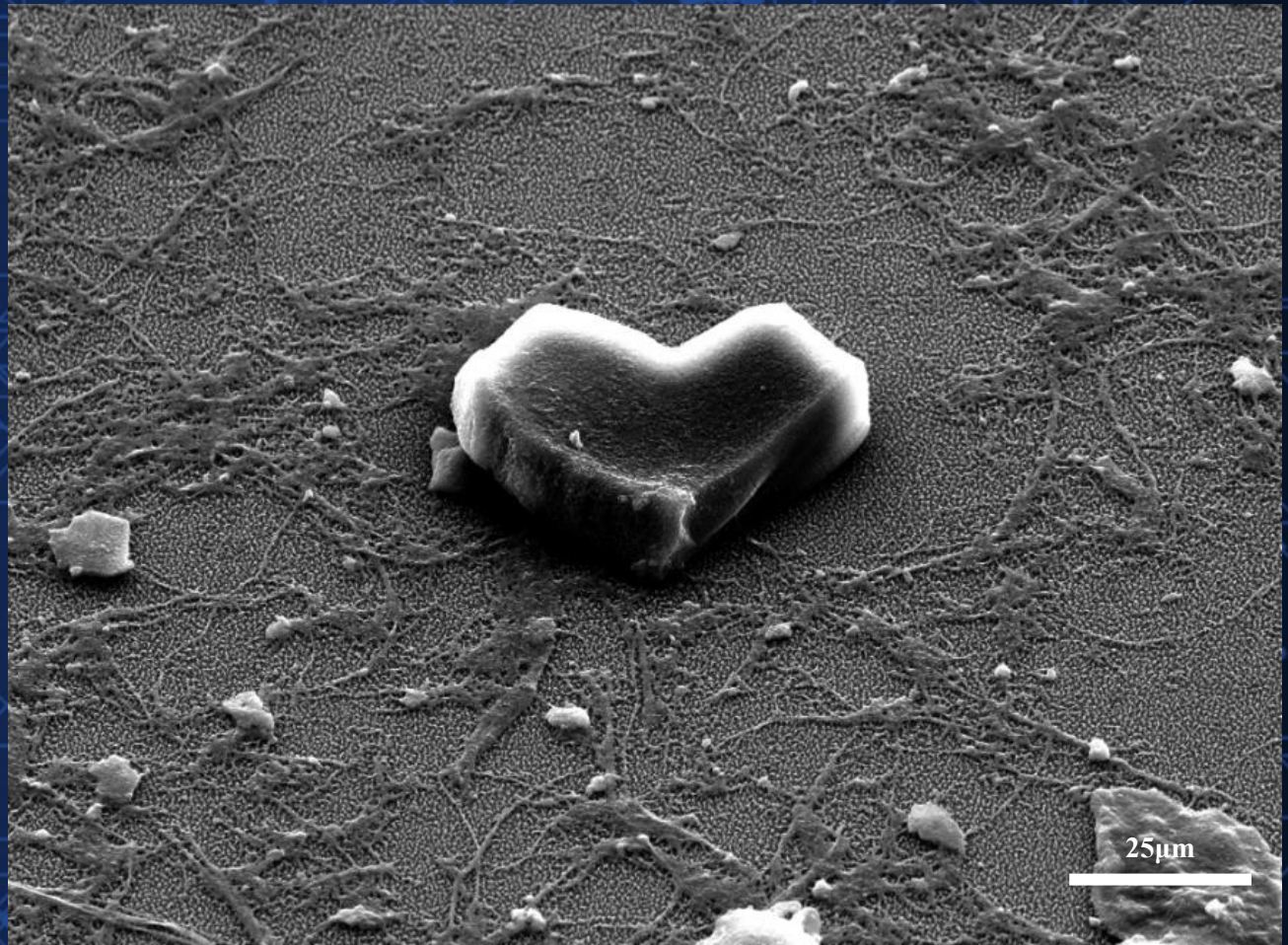
2021 EIPBN MicroGraph Contest

1

Micrograph Title:
LOVE FOR OUR WORLD

Description:
Occasionally scanning the sample, then found a piece of material naturally forming a “Heart” shape



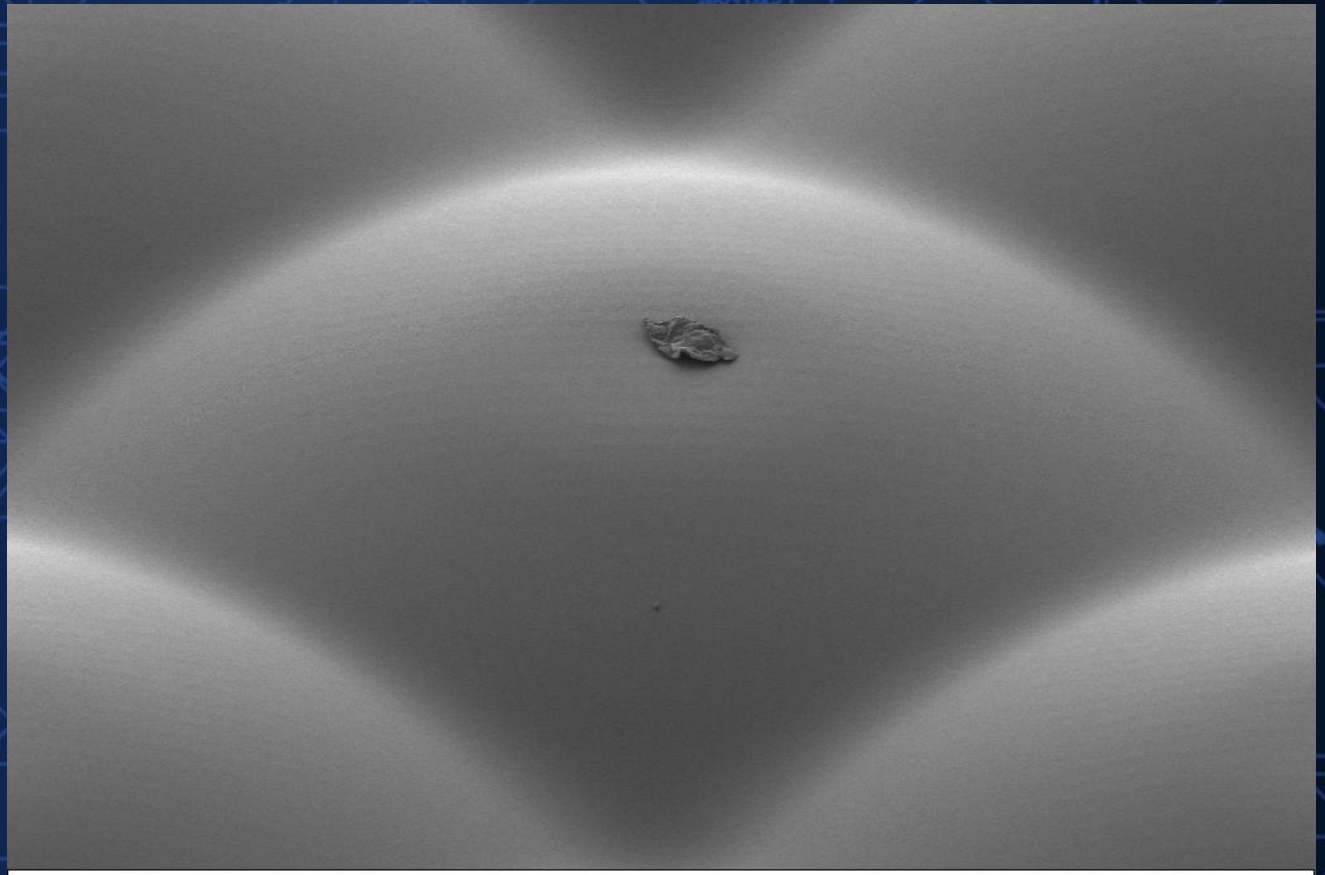
Orig. Mag (3"x4"image): 1.57 KX
Instrument : MIRA3 TESCAN
Submitted by: Xinye Chen
Affiliation: Rochester Institute of Technology

2021 EIPBN MicroGraph Contest

Micrograph Title:
The origin of the world?

Description:
Particle on a convex lens array in photoresist made with maskless grayscale lithography.

Orig. Mag (3"x4"image): 169X
Instrument : Zeiss Auriga SEM
Submitted by: Dominique Collé
Affiliation: Heidelberg Instruments



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2021 EIPBN MicroGraph Contest

Micrograph Title: Newborn Silicon Nanowires

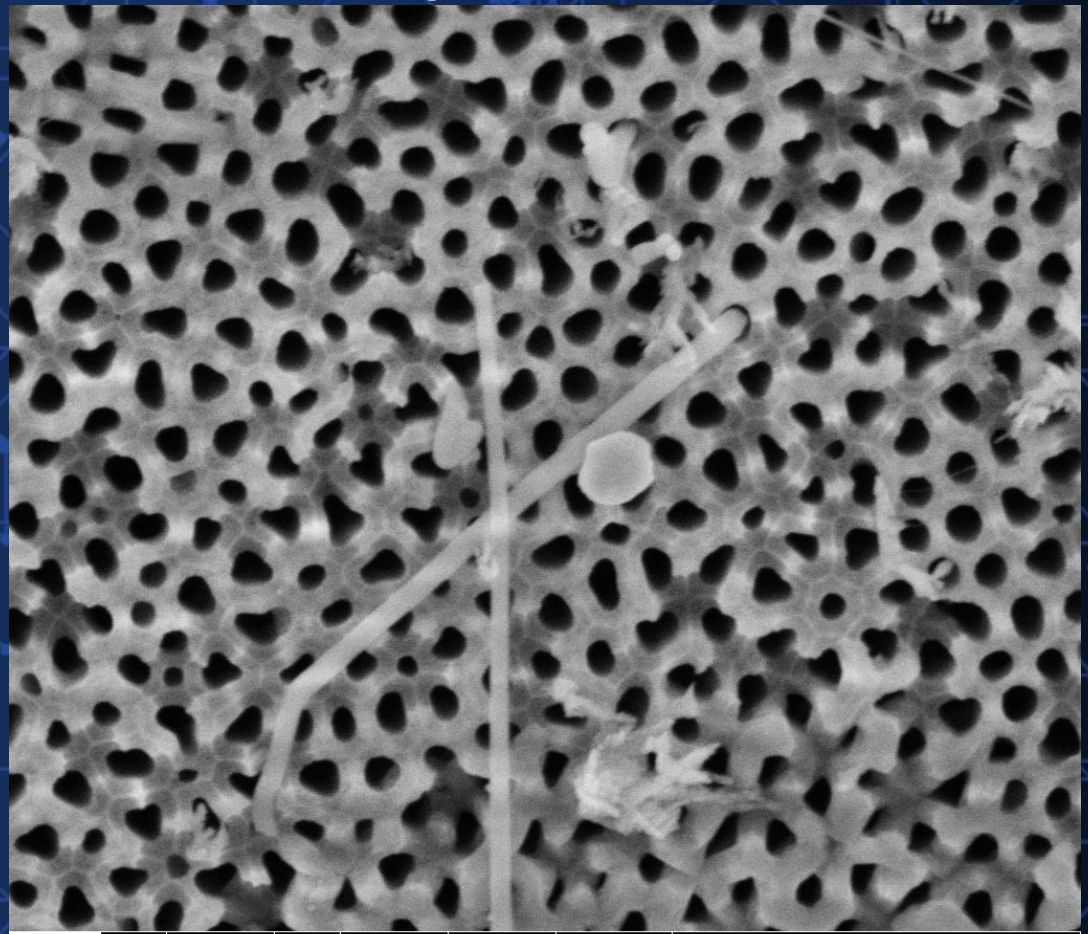
Description: Silicon nanowires nucleated and grown from the nanopores of an alumina template. This image depicts their birth, so we can watch their first moments leaving their cocoon. They grow up so fast!

Instrument : Thermo Fisher Scientific Quanta 650 FEG

Submitted by: Raul Back Campanelli

Affiliation: Institute of Physics "Gleb Wataghin".

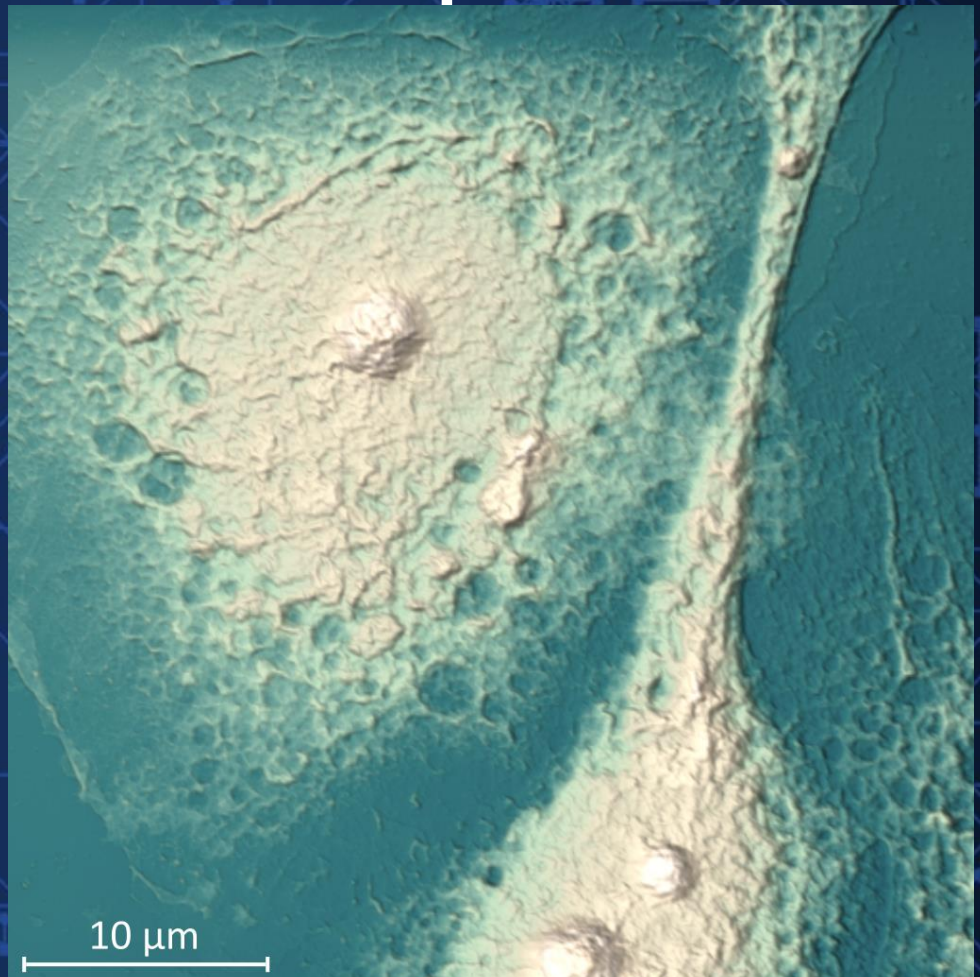
Acknowledgements: Brazilian Nanotechnology National Laboratory (LNNano), FAPESP, CAPES, CNPq.



2021 EIPBN MicroGraph Contest

Micrograph Title:
Sea of life

Description:
AFM topography of a breast cancer cell with visible absorbed nanoparticles, resembling an island in the sea.
With sample courtesy: Marco Cassani PhD, FNUSA Brno, Czech republic.
Orig. Mag (3"x4"image): 40 µm
Instrument : LiteScope
Submitted by: Radek Dao
Affiliation: NenoVision s.r.o.

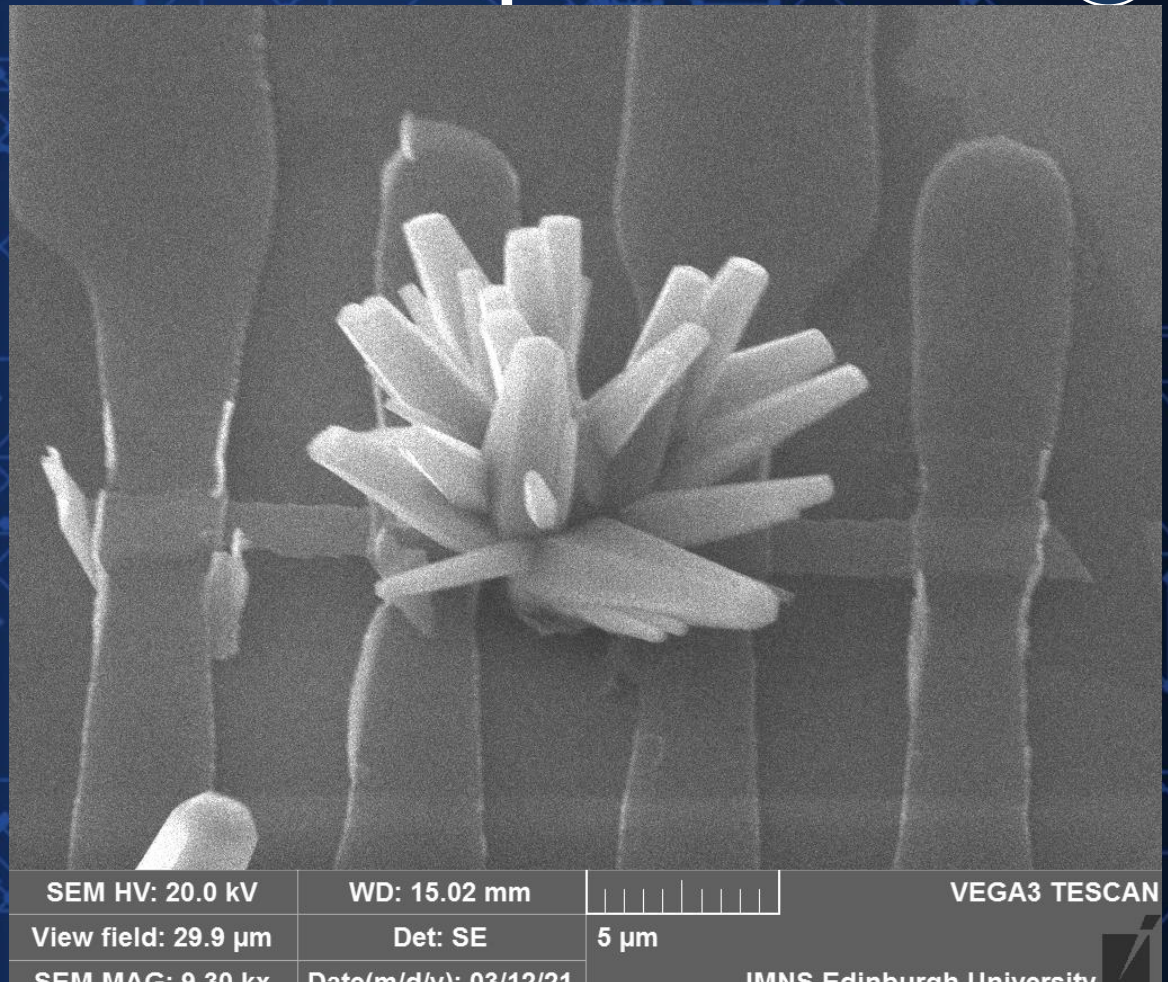


2021 EIPBN MicroGraph Contest

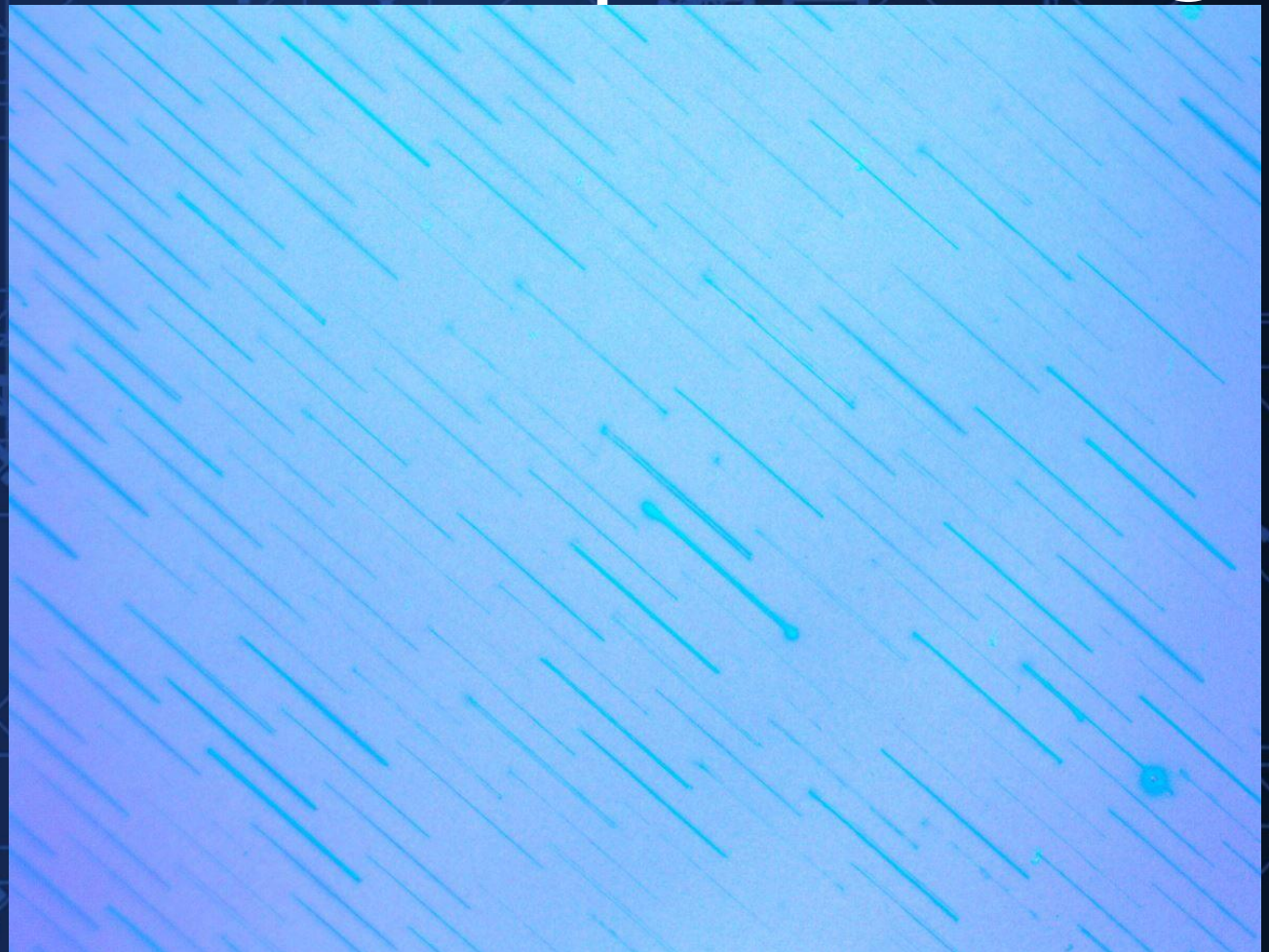
Micrograph Title:
Secret-admirer to a flower

Description:
The flower is a cluster of ZnO nanorods on WSe2 channel. There is a single ZnO rod on the lower left corner, which looks like a finger point to the flower.

Orig. Mag (3"x4"image): 9.30 KX
Instrument : VEGA3 TESCAN
Submitted by: Yulin Geng
Affiliation: Institute for Integrated Micro and Nano Systems, University of Edinburgh



2021 EIPBN MicroGraph Contest



Micrograph Title:
Meteor Shower

Description:
MoS2 patterns are site-selectively grown on the substrate. Different thickness of MoS2 stripes shows different darkness of color. The width of each stripe is 10μm.

Orig. Mag (3"x4"image): 10X
Instrument : Nikon Eclipse LV150
Submitted by: Mingze Chen
Affiliation: University of Michigan

Sponsored by: zyvex LABS

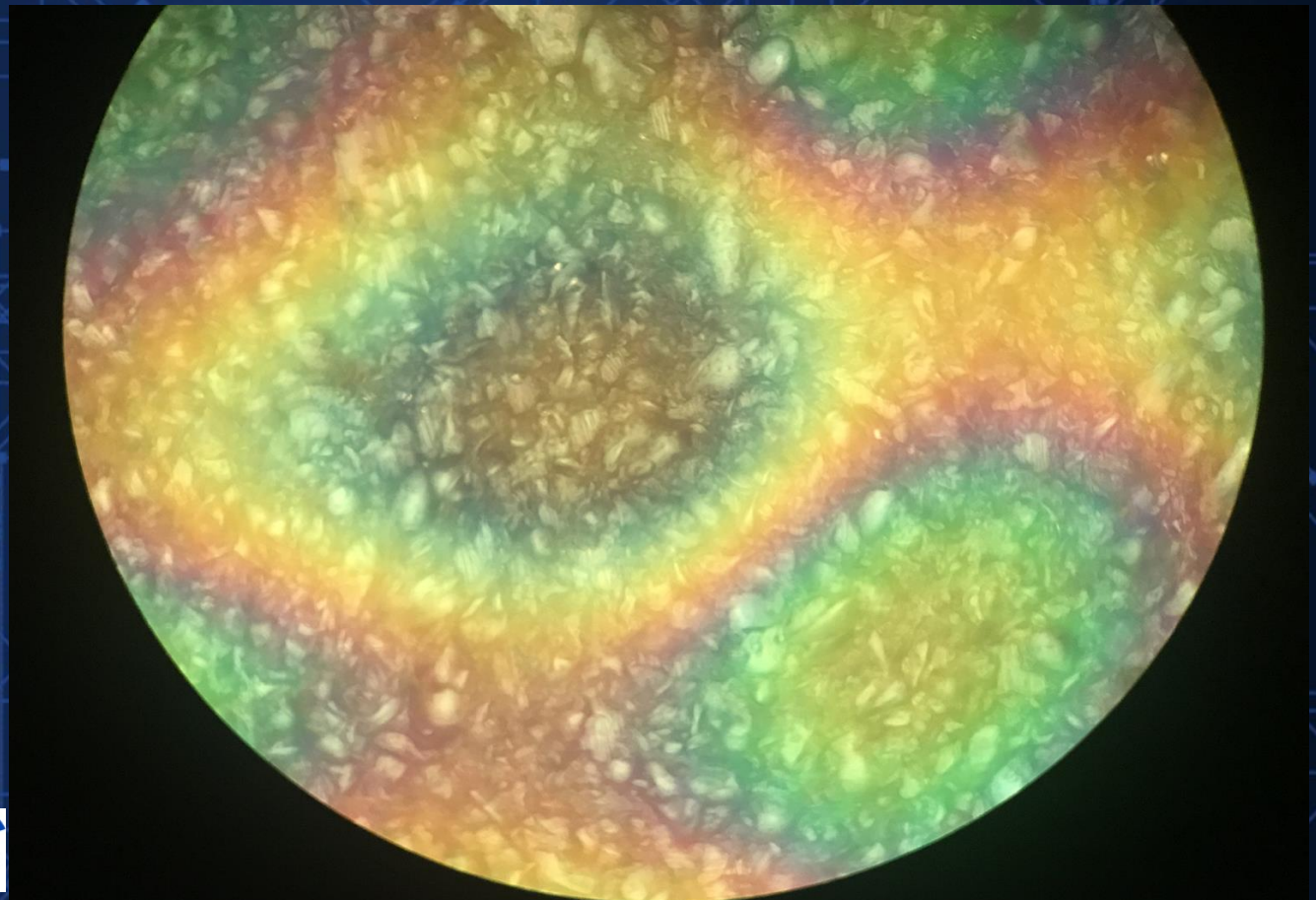
2021 EIPBN MicroGraph Contest

Micrograph Title:
Crystalized squares

Description:
This is a differential contrast micrograph of a Polyethylene terephthalate (PETE) imprinted with fiber-threaded rubber padding.

Orig. Mag (3"x4"image): 100x
Instrument : Olympus BX60

Submitted by: Blessing Adewumi
Affiliation: Louisiana State University, Baton Rouge, USA.



Sponsored by: zyvex LABS

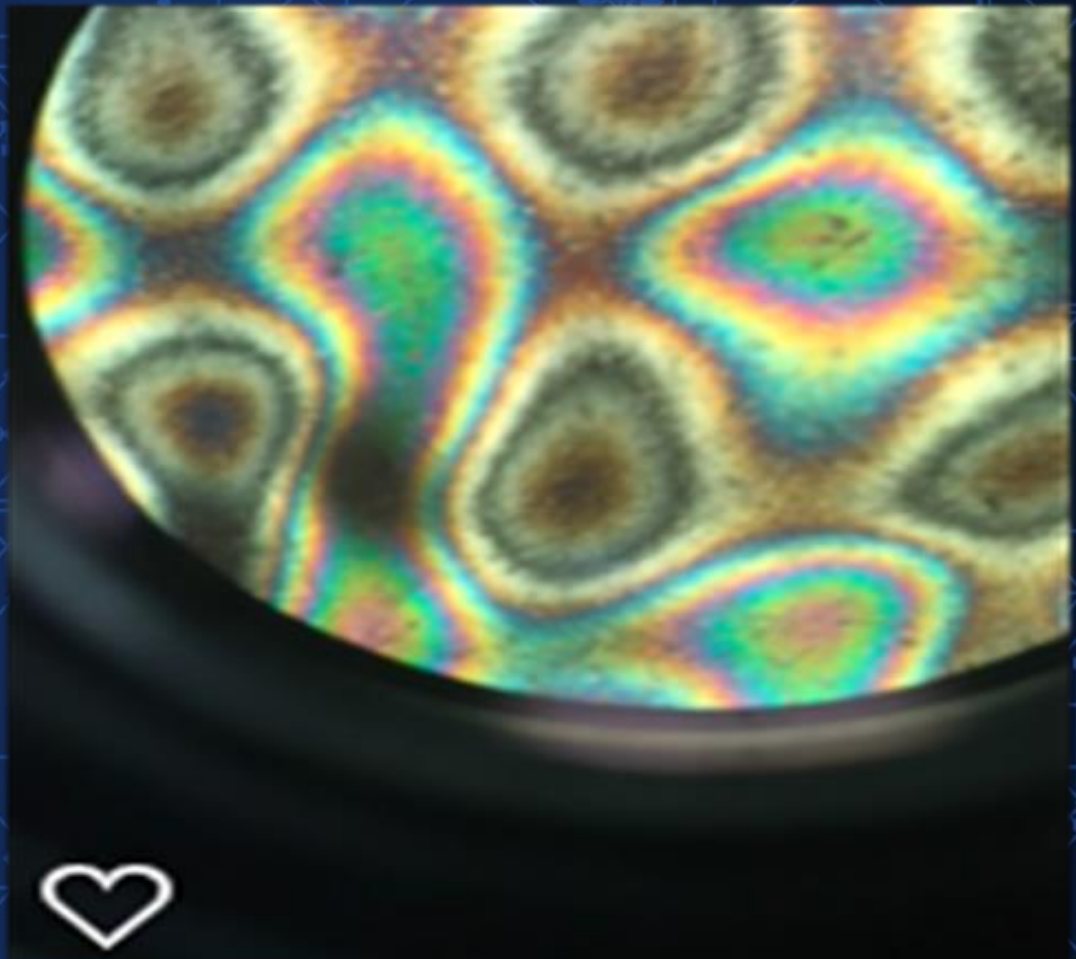
2021 EIPBN MicroGraph Contest

Micrograph Title:
Multicolored polygons

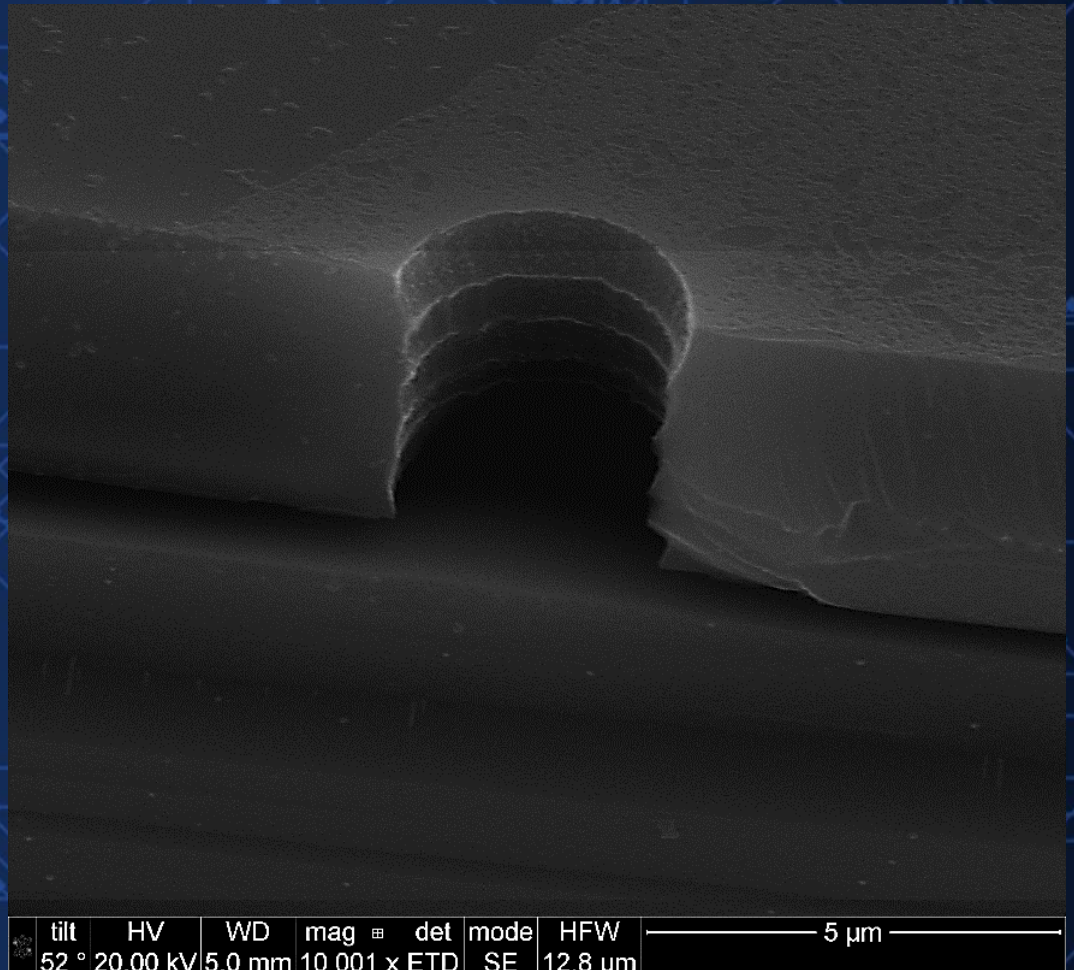
Description:
This is a differential contrast micrograph of a Polyethylene terephthalate (PETE) imprinted with fiber-threaded rubber padding.

Orig. Mag (3"x4"image): 50x
Instrument : Olympus BX60

Submitted by: Blessing Adewumi
Affiliation: Louisiana State University, Baton Rouge, USA.



2021 EIPBN MicroGraph Contest



Micrograph Title:
Silicon Cheesecake

Description:
Fabrication of Micro nozzle on a SOI wafer for Micro CVD.

Orig. Mag (3"x4"image): 10 KX
Instrument : FIB FEI Nova 600 NanoLab
Submitted by: Pavani Vamsi Krishna Nittala
Affiliation: Argonne National Laboratory & The University of Chicago

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

EIPBN 64th Meeting Virtual Conference 2021

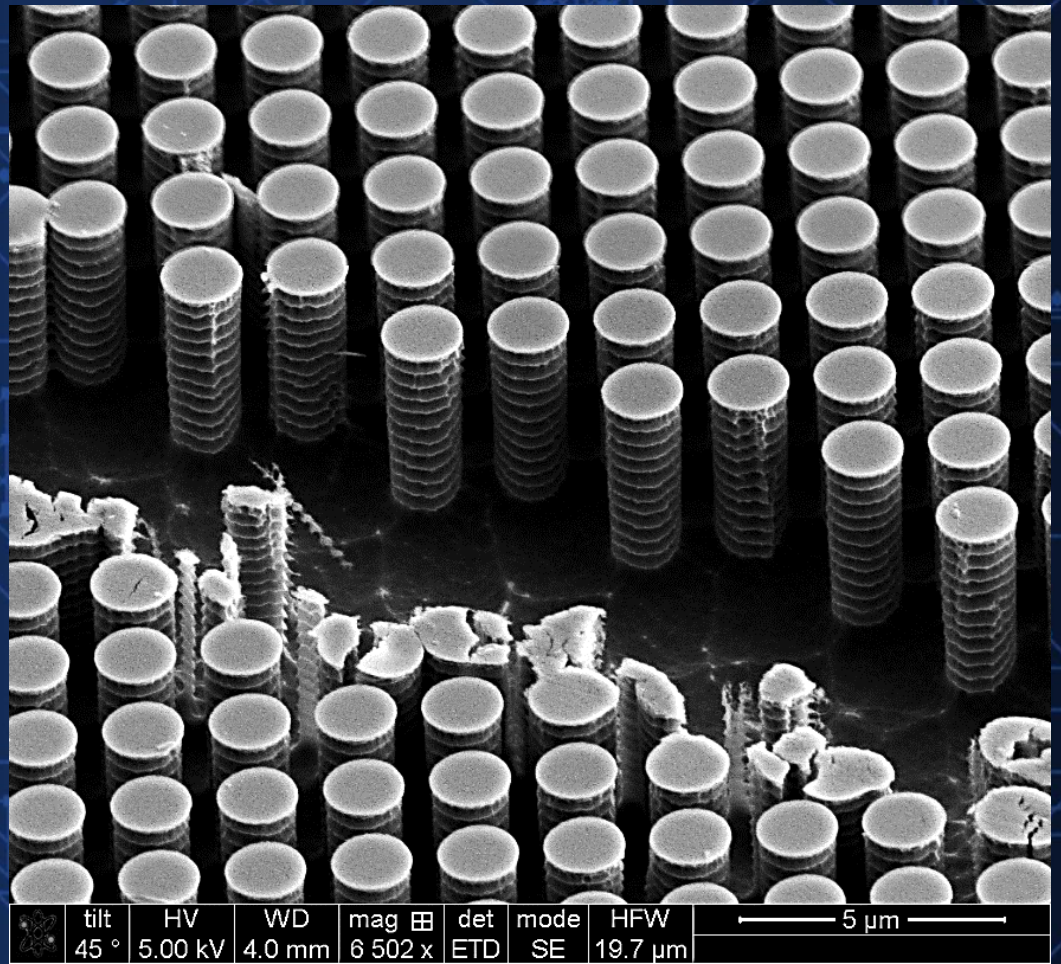
Micrograph Title:
Silicon Pillars

Description:
These 1 µm sized pillars fabricated using BOSCH are used to crush the biological cells

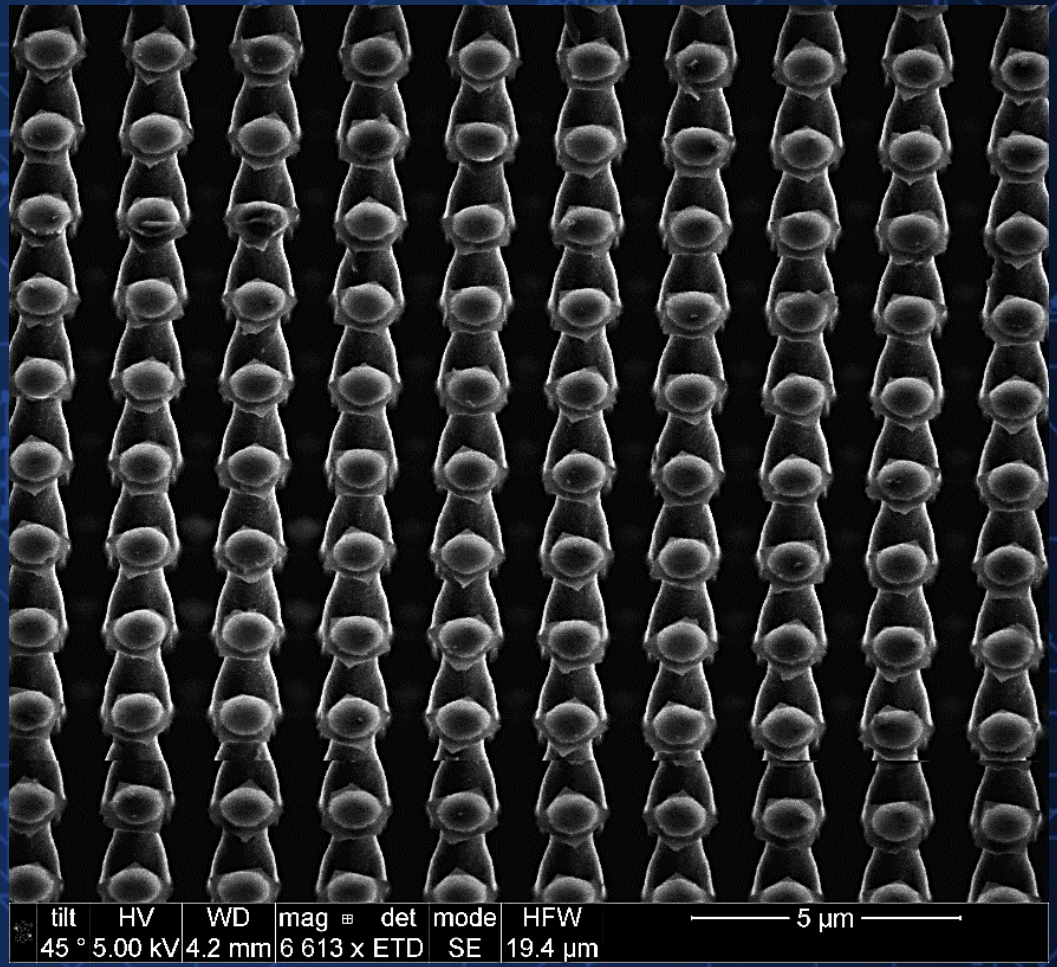
Orig. Mag (3"x4"image): 6.5 KX
Instrument : FIB FEI Nova 600 NanoLab

Submitted by: Pavani Vamsi Krishna Nittala

Affiliation: Argonne National Laboratory & The University of Chicago



2021 EIPBN MicroGraph Contest



Micrograph Title:
Micro Graduation

Description:
These 1 µm sized structures are fabricated using cryo etch and will be used to puncture the biological cell wall.

Orig. Mag (3"x4"image): 6.6 KX
Instrument : FIB FEI Nova 600 NanoLab
Submitted by: Pavani Vamsi Krishna Nittala
Affiliation: Argonne National Laboratory & The University of Chicago

Sponsored by: zyvex LABS

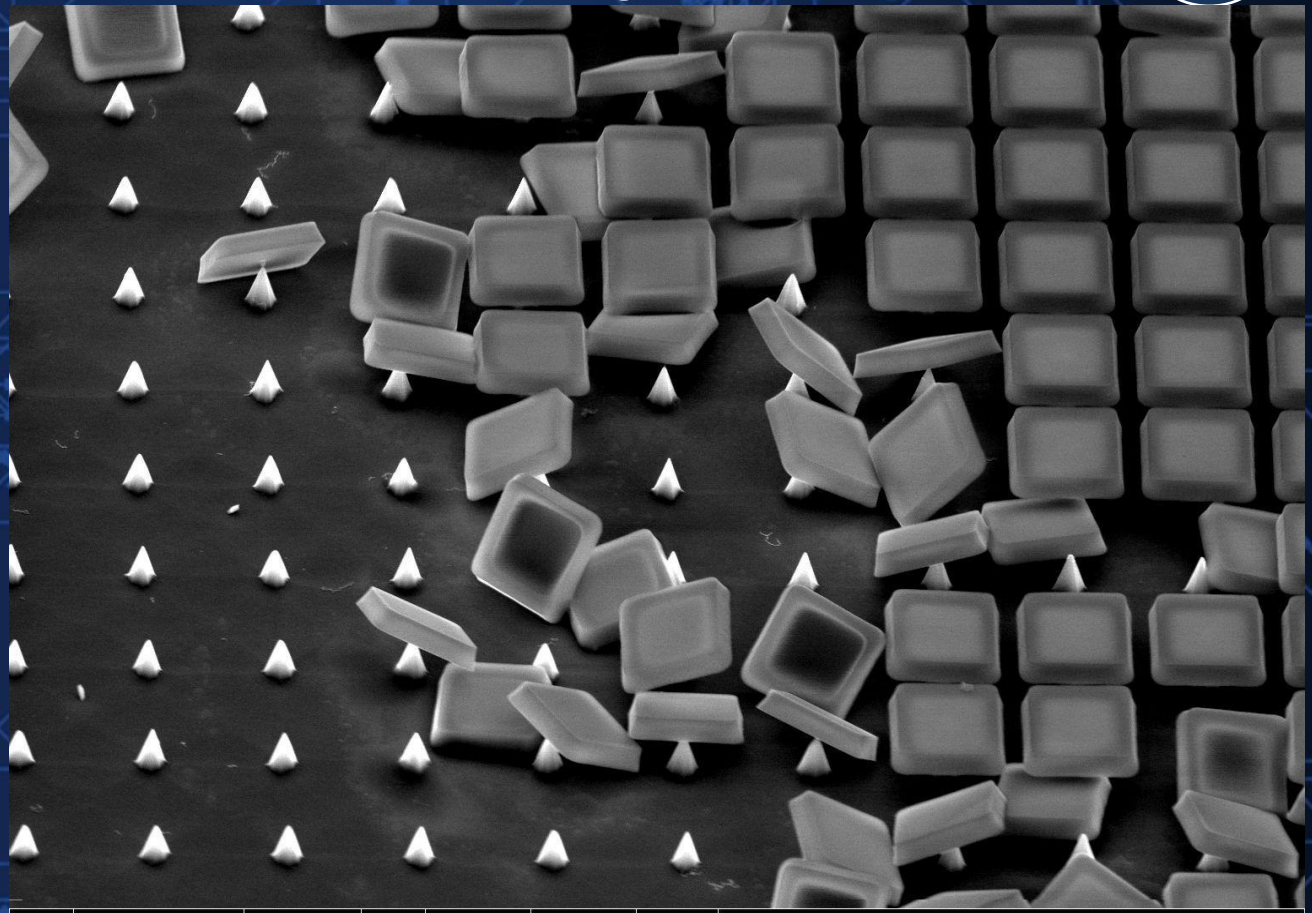
2021 EIPBN MicroGraph Contest

EIPBN 64th Meeting Virtual Conference 2021

Micrograph Title:
Life in 2020

Description:
These KOH based sharp silicon tips will be used to puncture the biological cell wall.

Orig. Mag (3"x4"image): 3.5 KX
Instrument : SEM FEI Quanta 650
Submitted by: Pavani Vamsi Krishna Nittala
Affiliation: Argonne National Laboratory & The University of Chicago



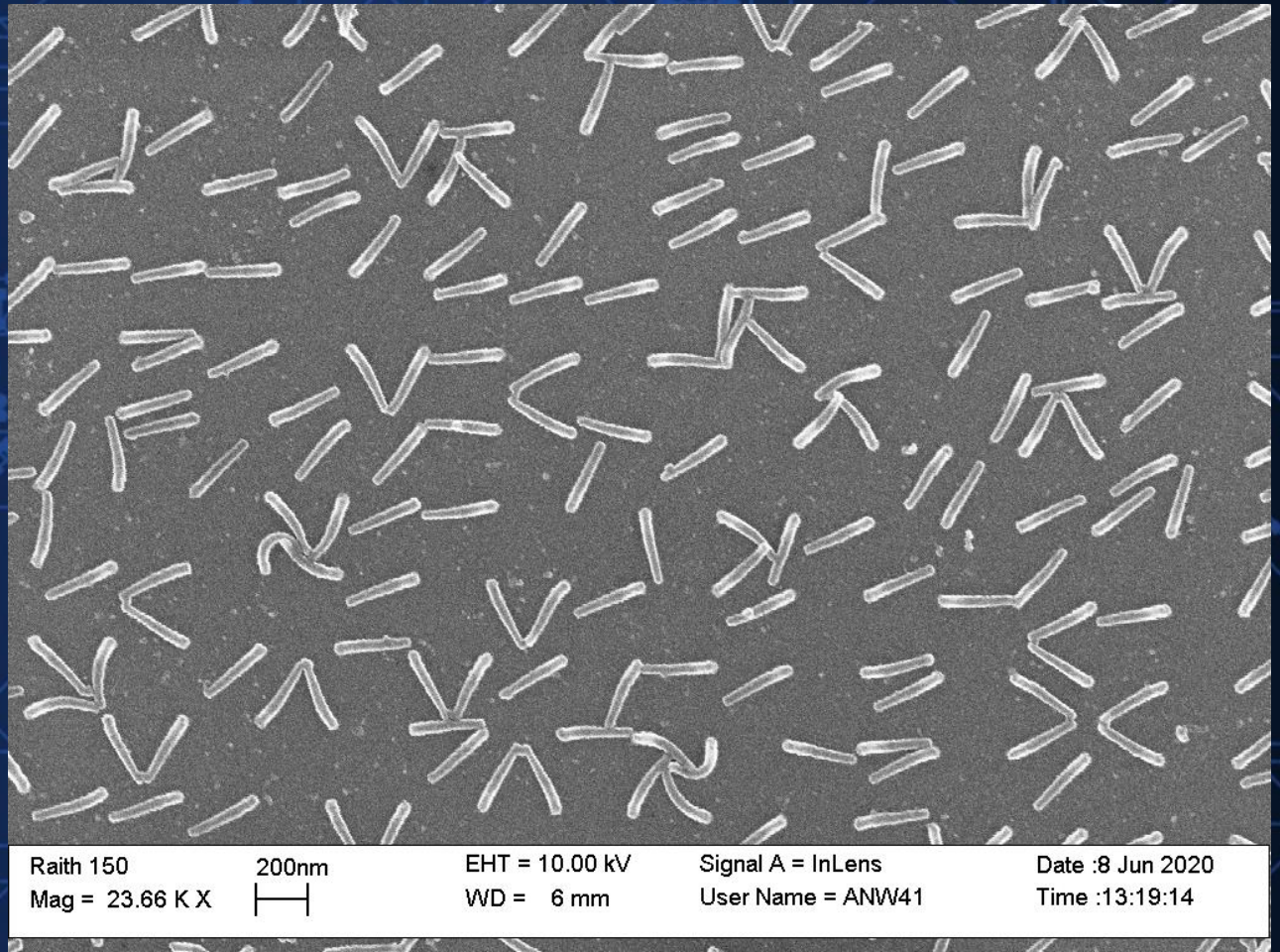
Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
The Nano-code

Description:
Lattice of PMMA pillars fabricated with EBL. Pillars have fallen over during exposure to solvents and have then been coated with 60 nm of Au.

Orig. Mag (3"x4"image): 23.66kX
Instrument : Raith 150
Submitted by: Aran Warren
Affiliation: University of Canterbury



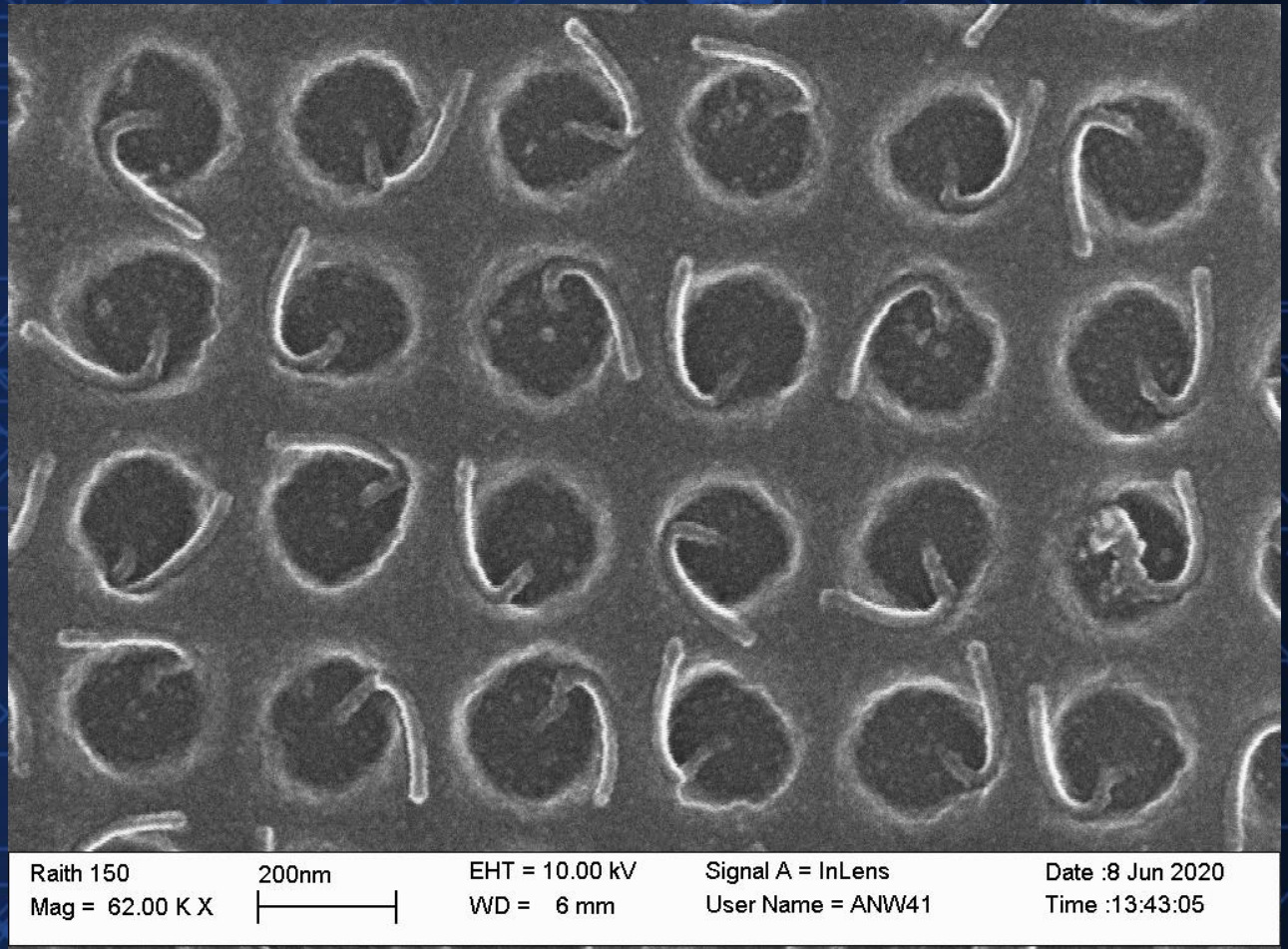
Sponsored by:

2021 EIPBN MicroGraph Contest

Micrograph Title:
Pool Noodles

Description:
PMMA coated with Au. Over exposed nanodot lattice using expired conductive polymer during EBL.

Orig. Mag (3"x4"image): 62kX
Instrument : Raith 150
Submitted by: Aran Warren
Affiliation: University of Canterbury



2021 EIPBN MicroGraph Contest

Micrograph Title:
Dr. Seuss Coloring Book

Description:
He painted this one with polymers.

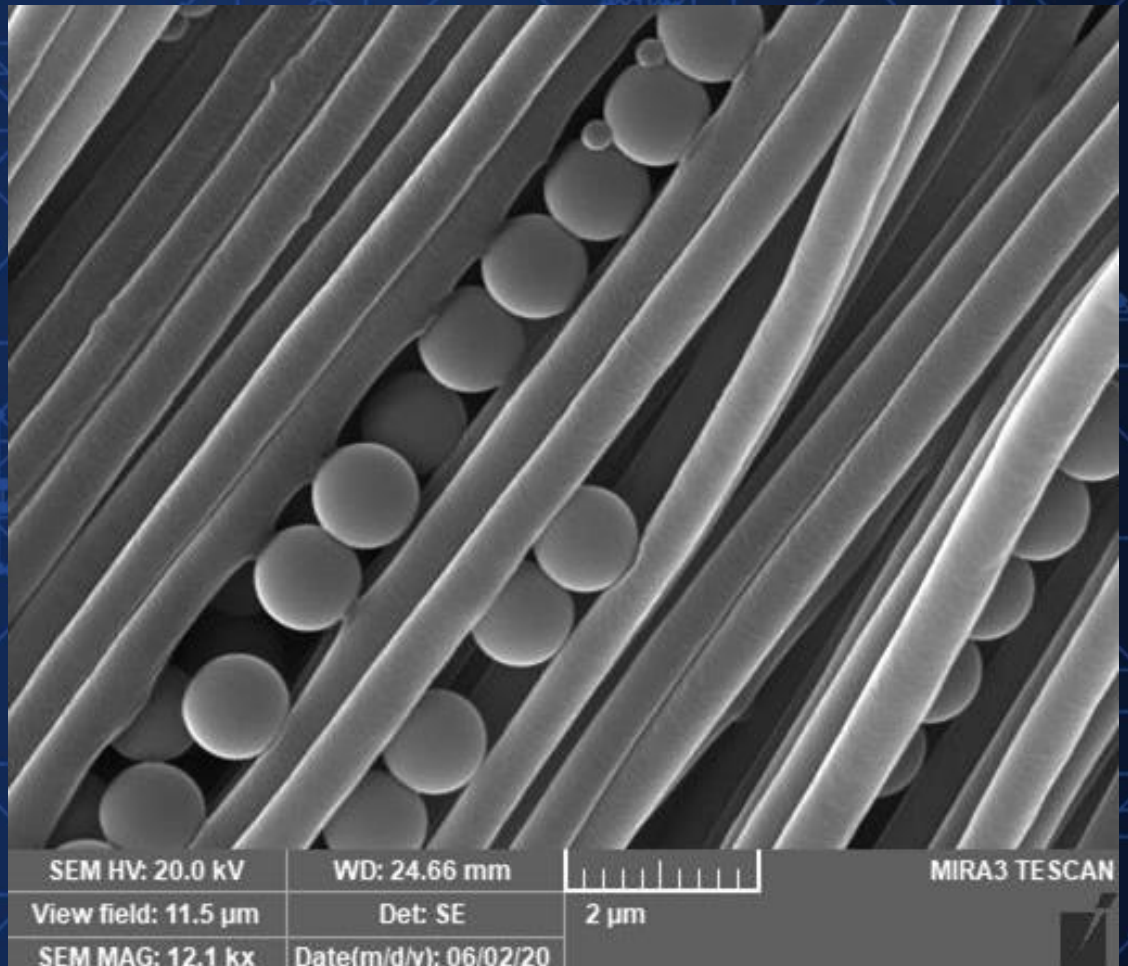
Orig. Mag (3"x4"image): 500 X
Instrument : Hitachi S-4500 SEM
Submitted by: Jessica M. Andriolo
Affiliation: Montana Tech Nanotechnology Laboratory

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Where's Mickey

Description:
Can you find him?



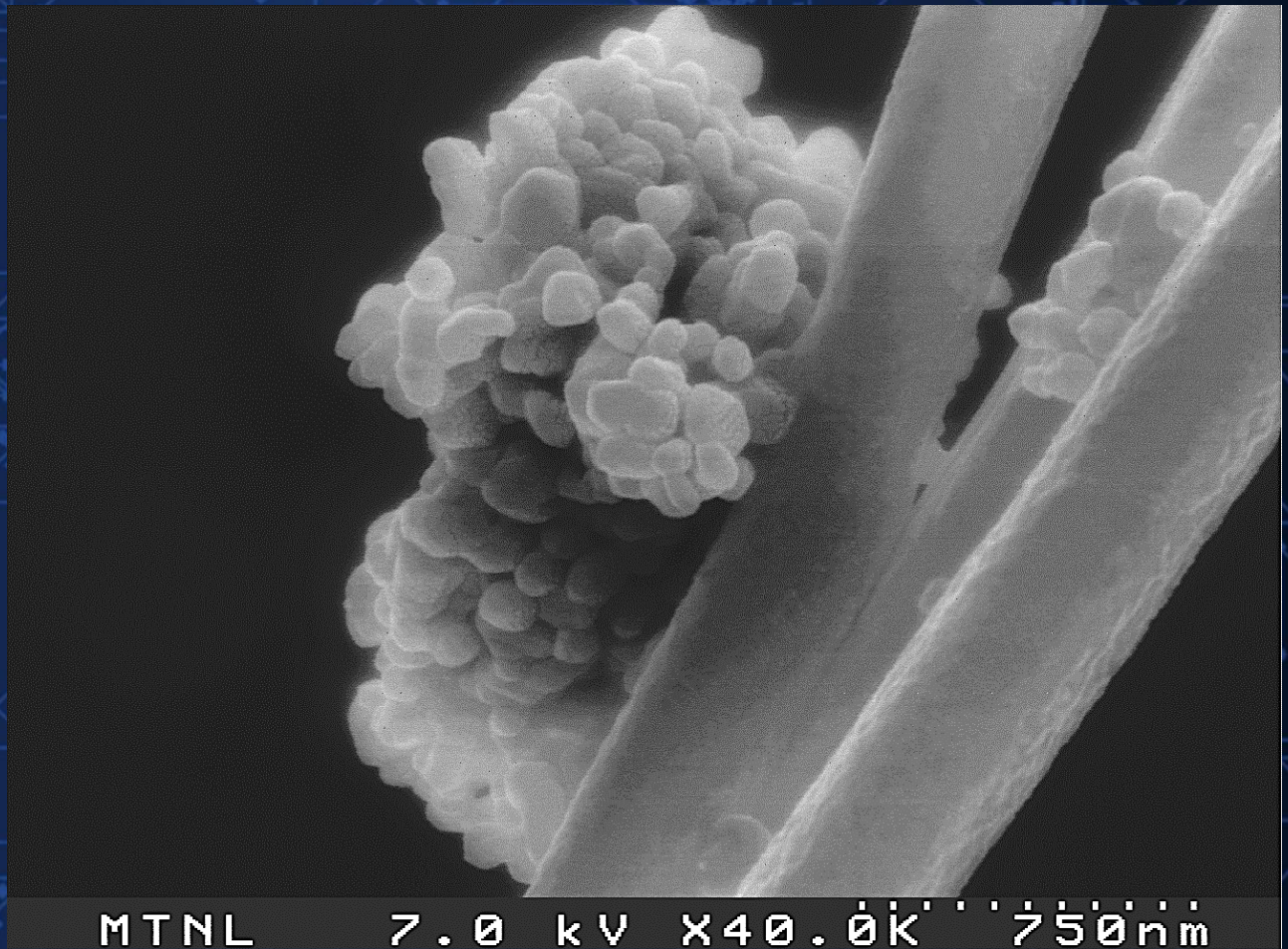
Orig. Mag (3"x4"image): 12.1 KX
Instrument : Tescan Mira 3 FESEM
Submitted by: Jessica M. Andriolo
Affiliation: Montana Tech Nanotechnology Labora

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Koala

Description:
Hanging on to the polymer tree.



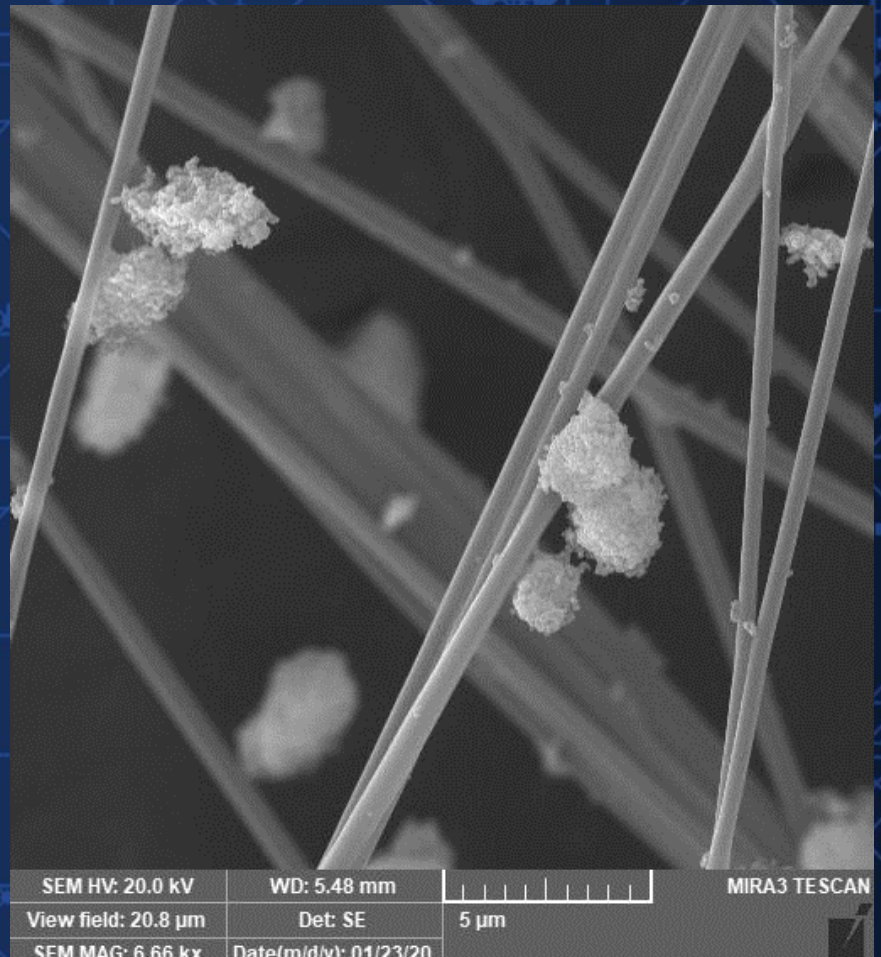
Orig. Mag (3"x4"image): 40 KX
Instrument : Hitachi S-4500 SEM
Submitted by: Jessica M. Andriolo
Affiliation: Montana Tech Nanotechnology Laboratory

2021 EIPBN MicroGraph Contest

Micrograph Title:
Caught Those Dirty Bugs

Description:
Electrospun Anti-Bio-Warfare-Threat Filtration System

Orig. Mag (3"x4"image): 6.66 KX
Instrument : Tescan Mira 3 FESEM
Submitted by: Jessica M. Andriolo
Affiliation: Montana Tech Nanotechnology Laborat

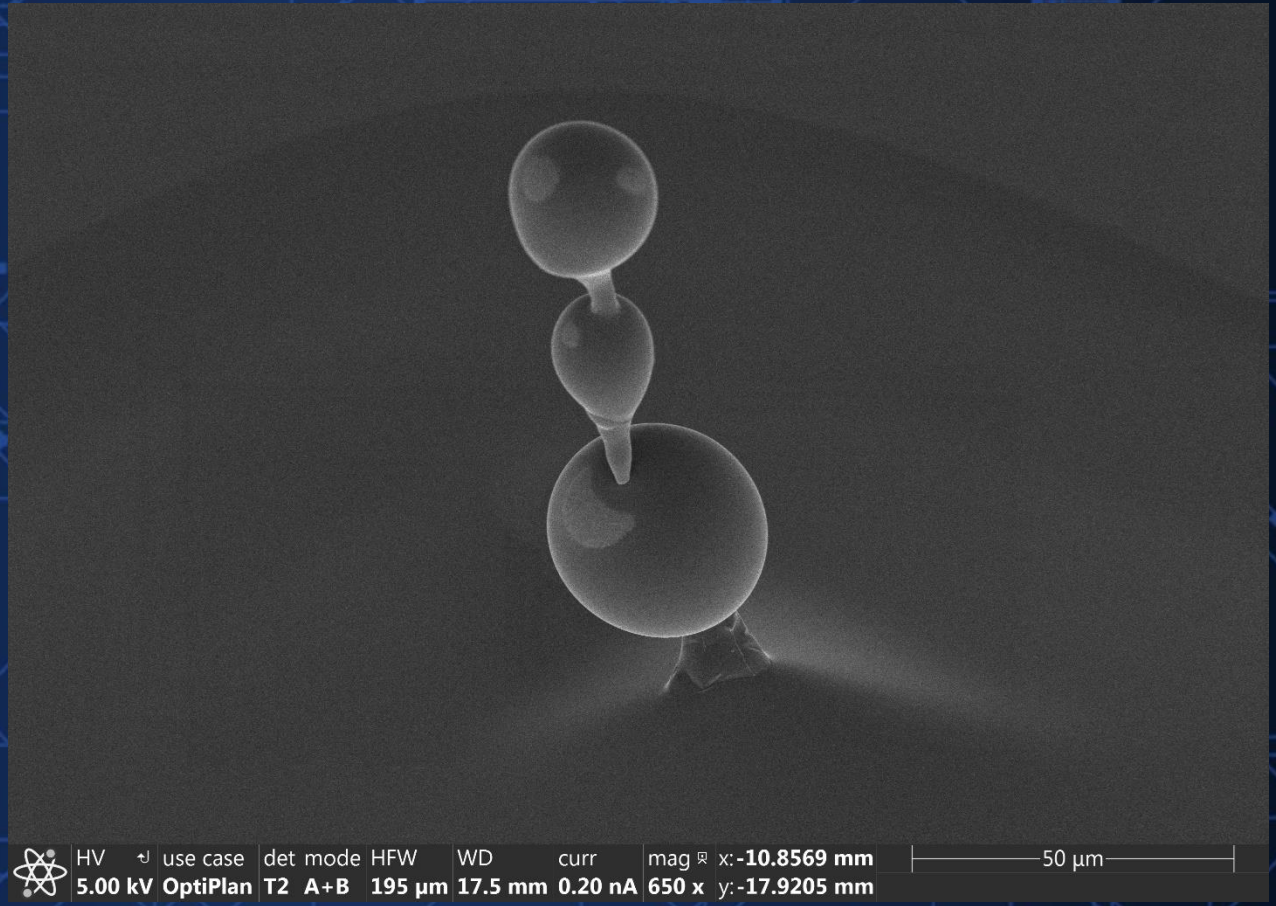


Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
A snowman's chance in…

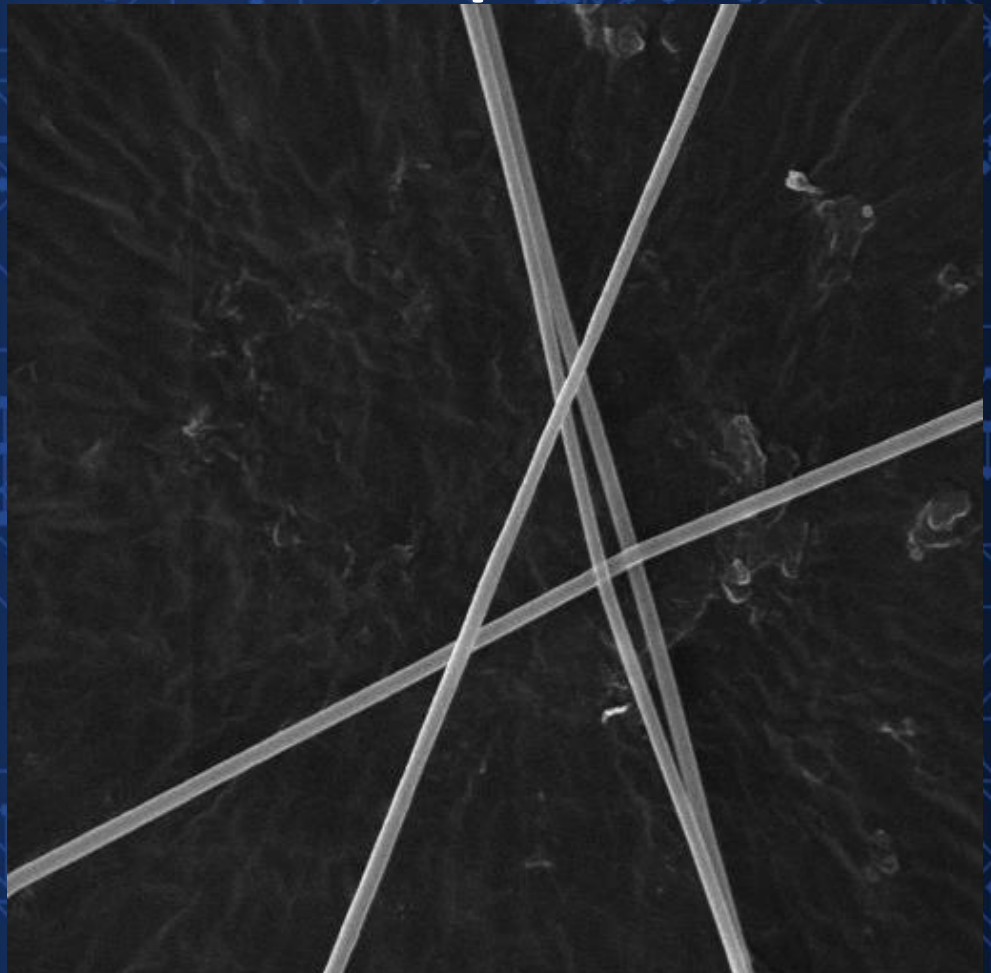
Description:
We put a freshly RCA'd SOI wafer into an RTA @ 1200°C to grow 50 nm of oxide. This (and others like it) were sticking off the back side surface of the handle wafer after. We have stopped putting SOIs into the RTA…



Orig. Mag (3"x4"image): 650x
Instrument : FEI Apreo
Submitted by: Mark McLean and William Osborn
Affiliation: NIST

Sponsored by:

2021 EIPBN MicroGraph Contest



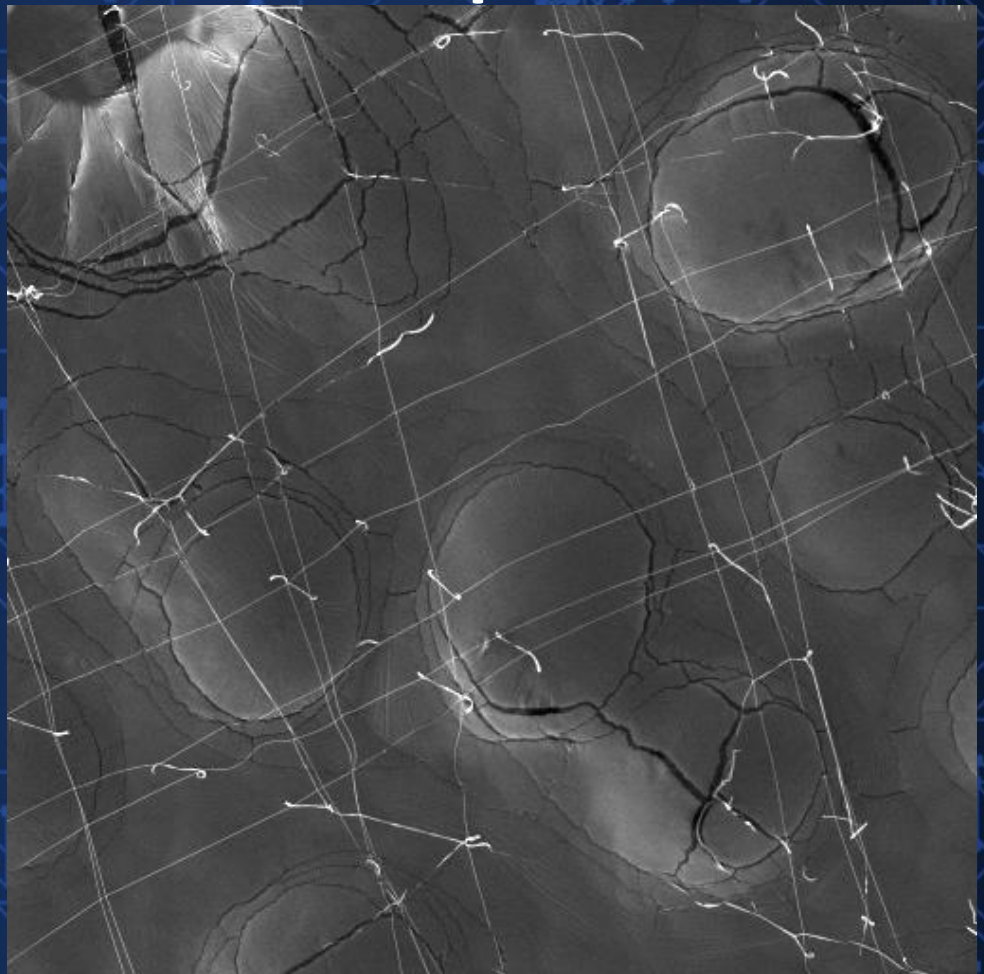
Micrograph Title:
Anarchy Zone

Description:
Cross Hatch PCL nanofibers obtained via multi-electrode electrospinning. The fibres create a unique scene passing over each other. Rotated 180 °

Orig. Mag (3"x4"image): 5.82KX
Instrument : TESCAN MIRA 3

Submitted by:
Affiliation: Montana Technological University- MTNL

2021 EIPBN MicroGraph Contest



Micrograph Title:
Lunar Roving

Description:
Cross Hatch PCL nanofibers obtained via multi-electrode electrospinning.

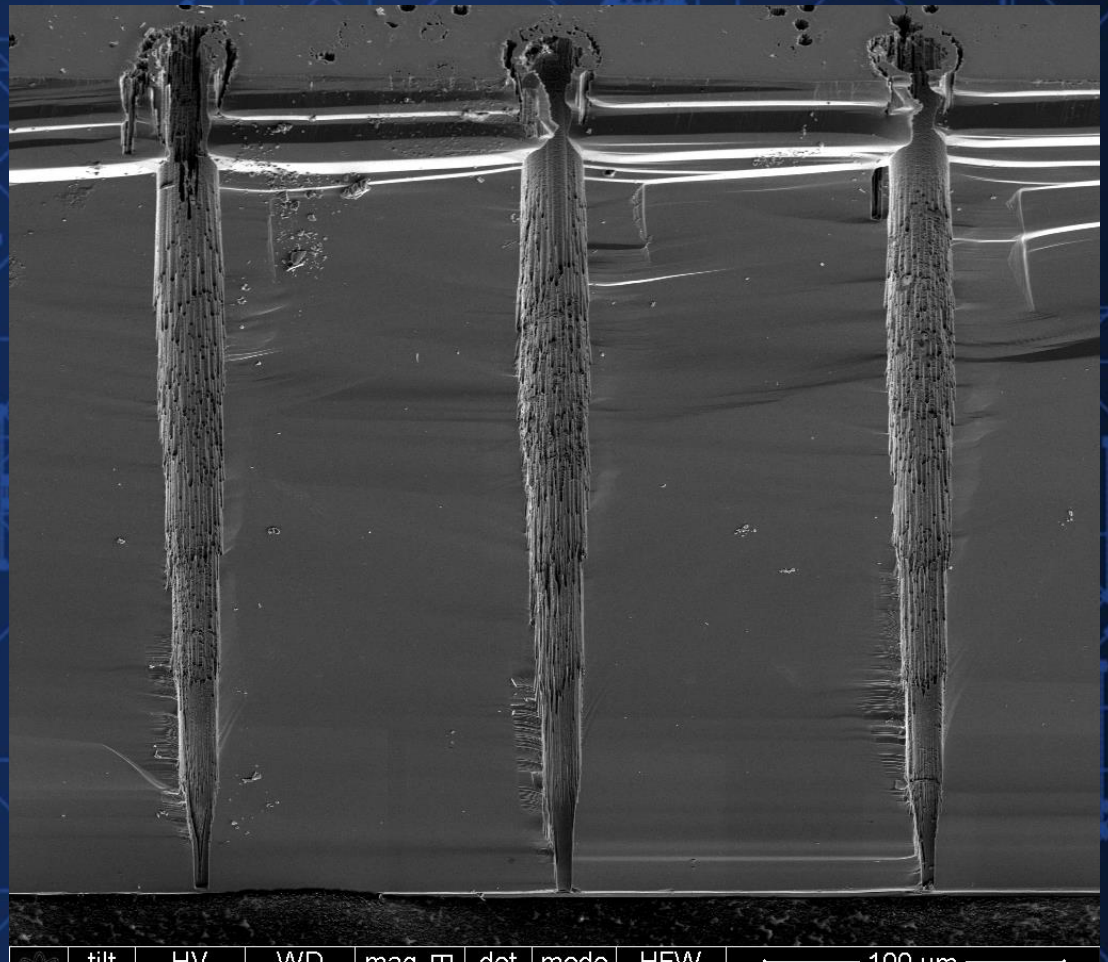
Orig. Mag (3"x4"image): 193X
Instrument : TESCAN MIRA 3
Submitted by:
Affiliation: Montana Technological University- MTNL

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Through Silicon Via

Description:
Fabrication of 10 µm Via to a depth of 400 µm using DRIE.



Orig. Mag (3"x4"image): 0.35 KX
Instrument : FIB FEI Nova 600 NanoLab
Submitted by: Pavani Vamsi Krishna Nittala
Affiliation: Argonne National Laboratory & The University of Chicago

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Through Silicon Via

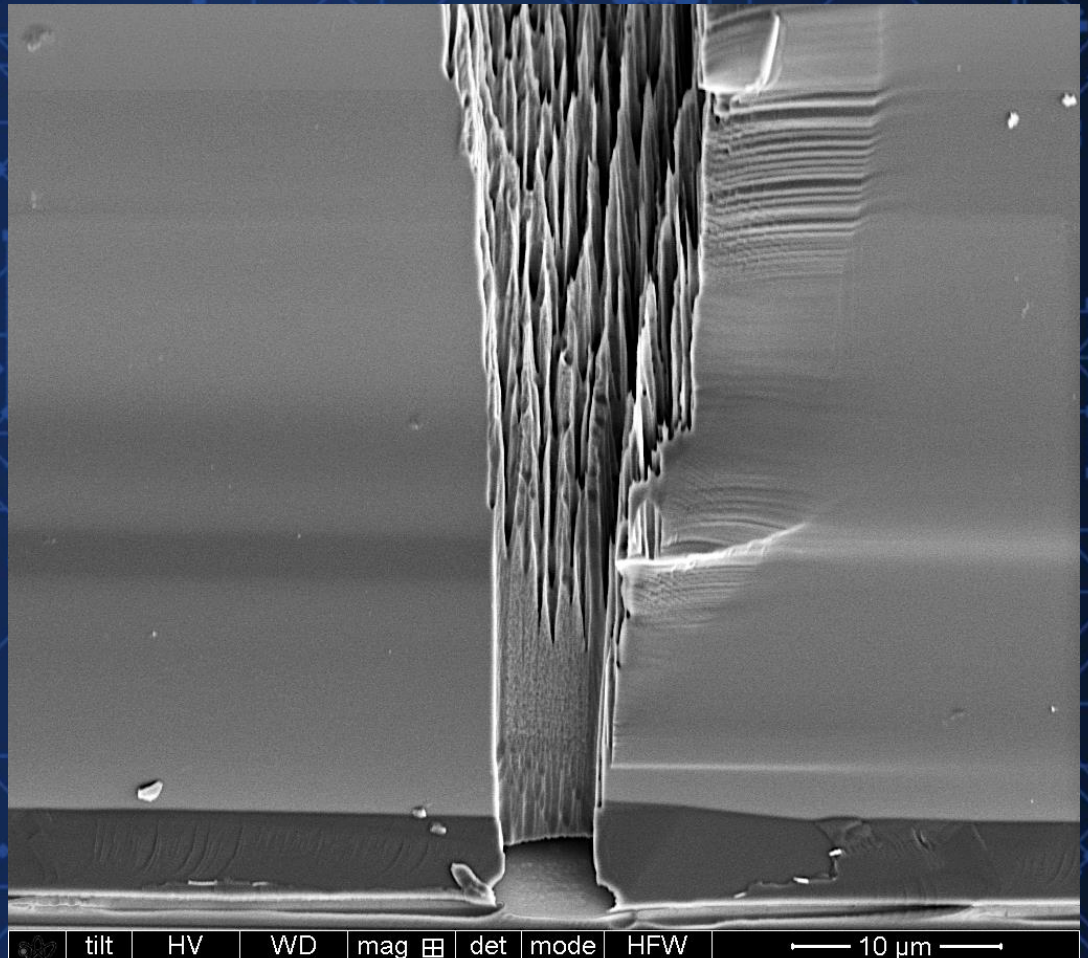
Description:
Fabrication of 10 µm Via to a depth of 400 µm using DRIE, landed on the BOX of a SOI wafer.

Orig. Mag (3"x4"image): 2.5 KX
Instrument : FIB FEI Nova 600 NanoLab

Submitted by: Pavani Vamsi Krishna Nittala

Affiliation: Argonne National Laboratory & The University of Chicago

Sponsored by: zyvex LABS

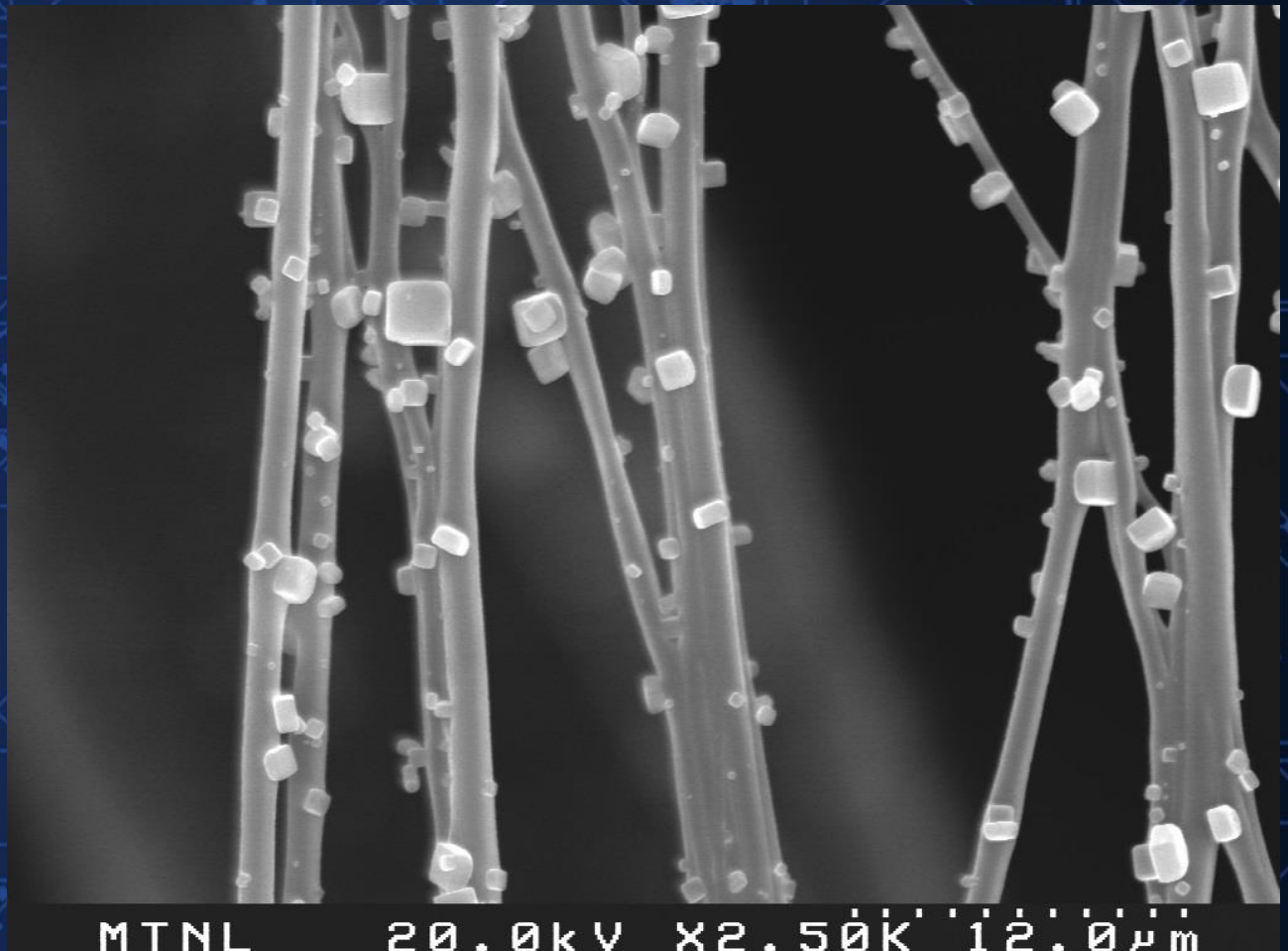


2021 EIPBN MicroGraph Contest

Micrograph Title:
Salty Trunks

Description:
NaCl crystals on aligned electrospun PCL trunks.

Orig. Mag (3"x4"image): 2.5KX
Instrument : Hitachi S4500 Field Emission SEM
Submitted by: Luke J. Suttey
Affiliation: Montana Tech Nanotechnology Laboratory

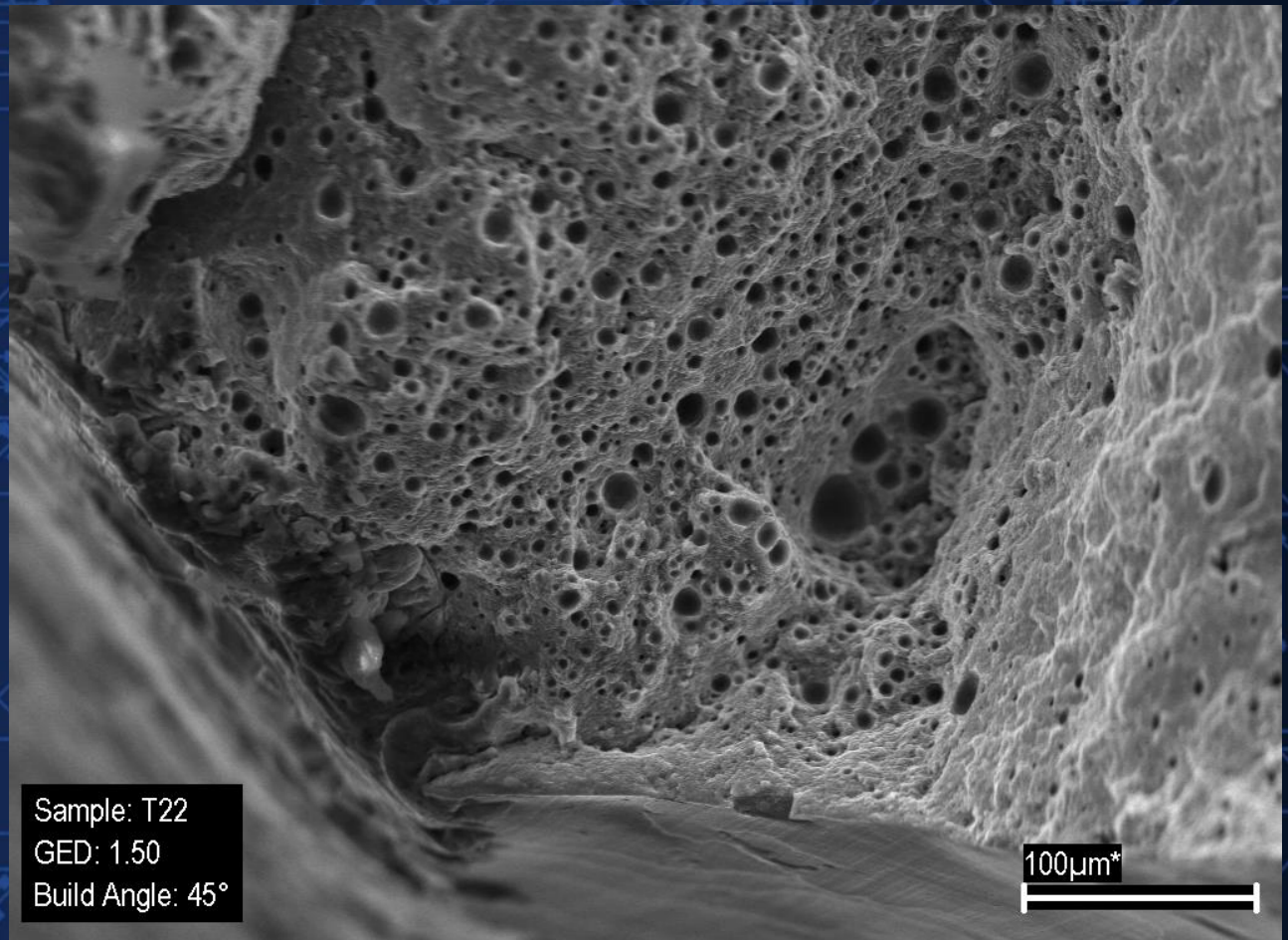


2021 EIPBN MicroGraph Contest

EIPBN 64th Meeting Virtual Conference 2021

Micrograph Title:
Trypophobia Cave

Description:
Porosity within a fractographic image of additively manufactured AlSi10Mg.



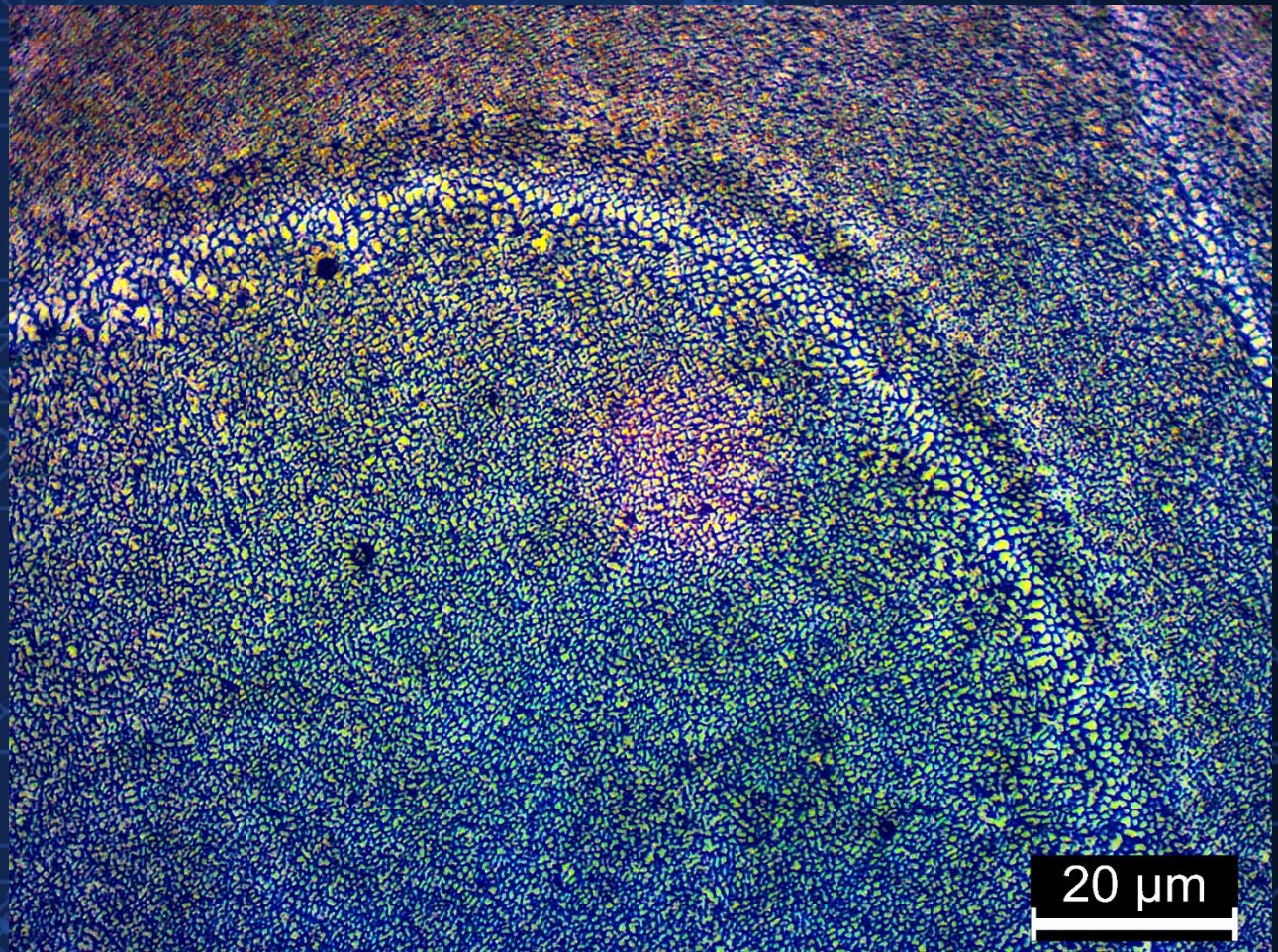
Orig. Mag (3"x4"image): 360X
Instrument : LEO 1430VP SEM
Submitted by: Luke J. Suttey
Affiliation: Montana Tech Nanotechnology Laboratory

2021 EIPBN MicroGraph Contest

Micrograph Title:
Aluminum Dragon Scales

Description:
Metallographic image of AlSi10Mg produced using additive manufacturing.

Orig. Mag (3"x4"image): 1KX
Instrument : LEICA DM750M
Submitted by: Luke J. Suttey
Affiliation: Montana Tech Nanotechnology Laboratory



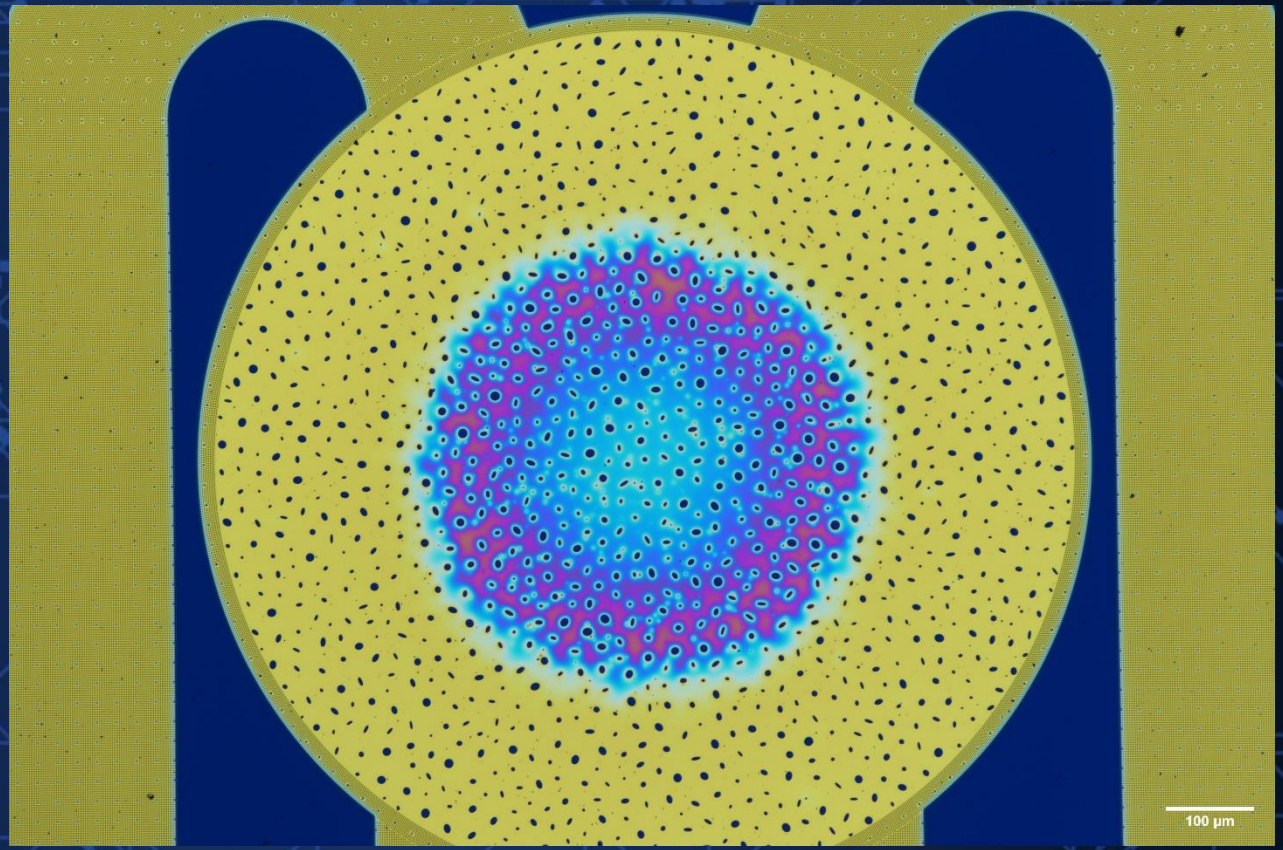
Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
ET is watching…beware of the eye!

Description:
A released 75nm nitride membrane supported with random pillars. Shaded area is staining from the wet etch. The yellow lines on the sides of the image are fluidic leads.

Orig. Mag (3"x4"image): 10x
Instrument : Nikon L200 Compound Optical Microscope
Submitted by: Alokik Kanwal
Affiliation: NIST



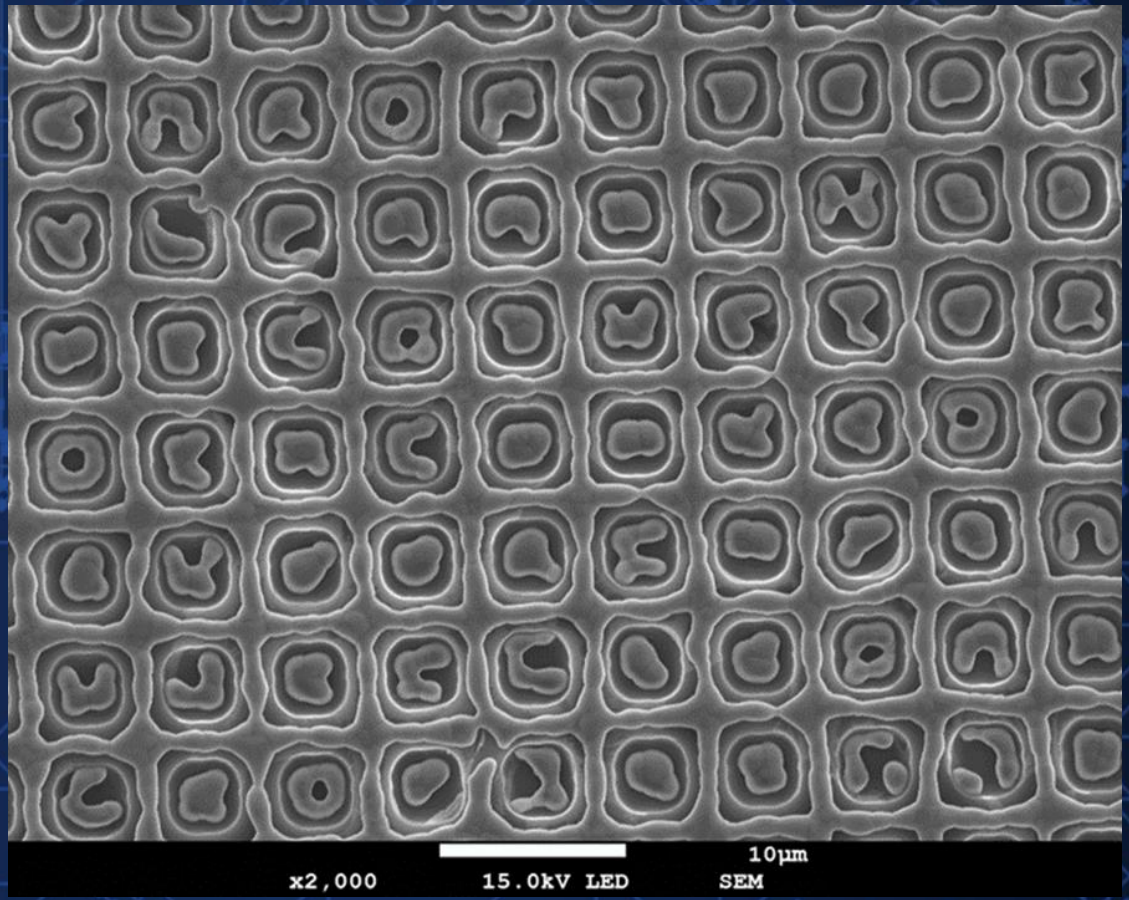
Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Alphabet

Description:
Ni film deposited and melted on perforated SiO_2 surface

Orig. Mag (3"x4"image): 2 KX
Instrument : see NIST declaimer
Submitted by: Andrei Kolmakov
Affiliation: NIST



Sponsored by: zyvex LABS

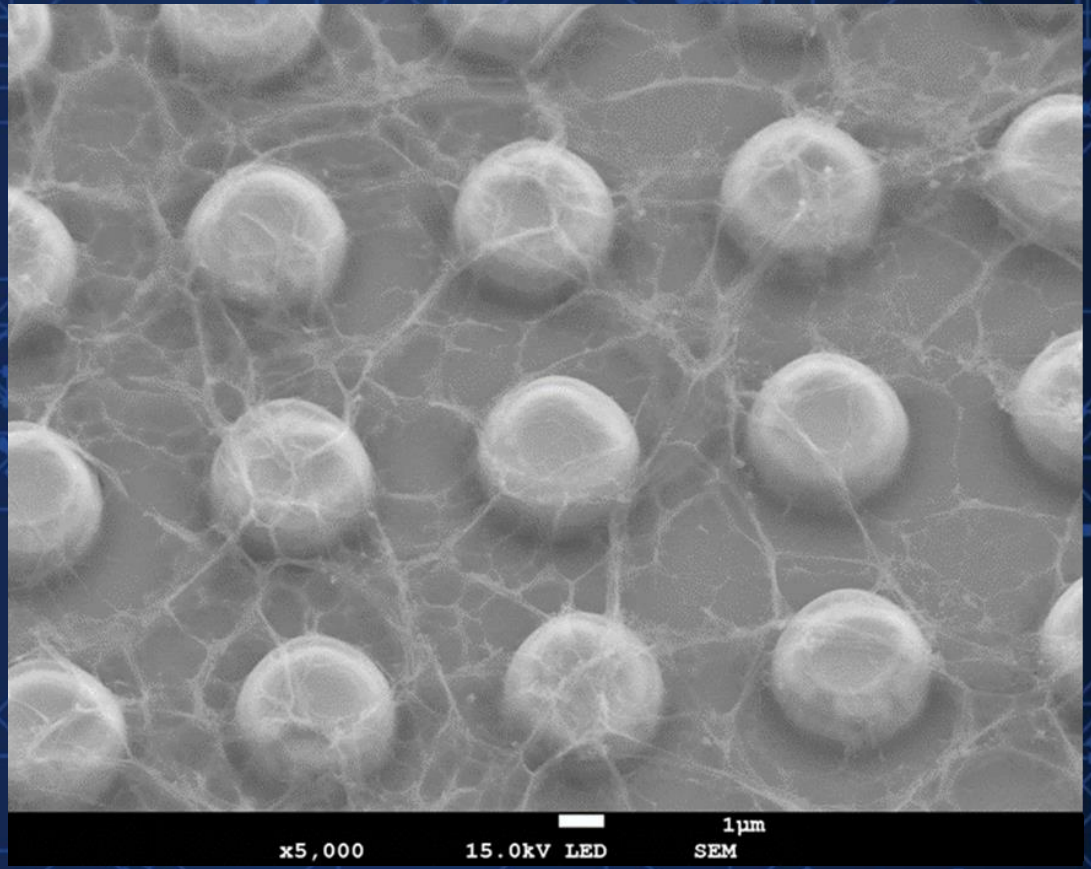
NIST declaimer Certain commercial products or company names are identified here to describe our study adequately. Such identification is not intended to imply recommendation or endorsement by the National Institute of Standards and Technology, nor is it intended to imply that the products or names identified are necessarily the best available for the purpose.

2021 EIPBN MicroGraph Contest

Micrograph Title:
Neural Network

Description:
PMMA graphene film placed over Cu studs and etched with oxygen plasma

Orig. Mag (3"x4"image): 5 KX
Instrument : see NIST declaimer
Submitted by: Andrei Kolmakov
Affiliation: NIST



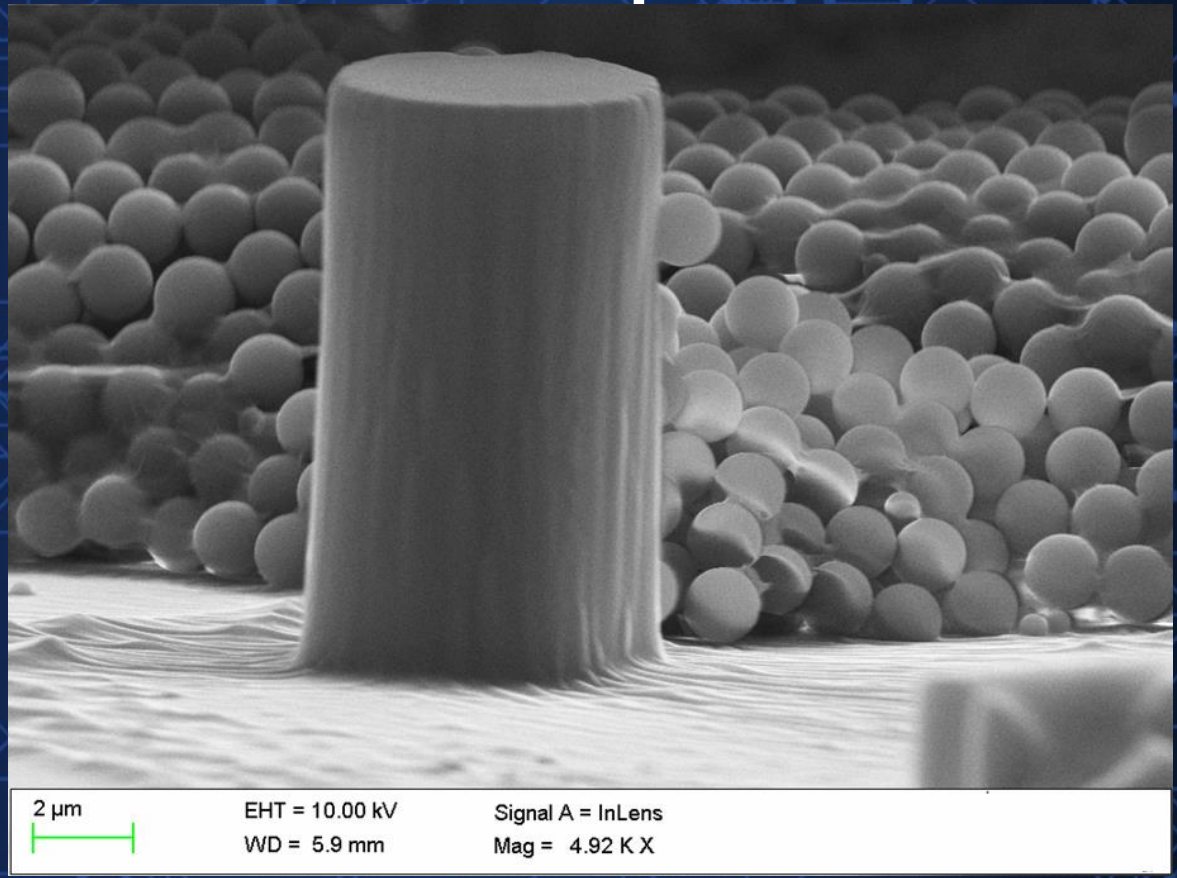
Sponsored by:

NIST declaimer Certain commercial products or company names are identified here to describe our study adequately. Such identification is not intended to imply recommendation or endorsement by the National Institute of Standards and Technology, nor is it intended to imply that the products or names identified are necessarily the best available for the purpose.

2021 EIPBN MicroGraph Contest

Micrograph Title:
Alone

Description:
PDMS micro post surrounded with polystyrene microparticles

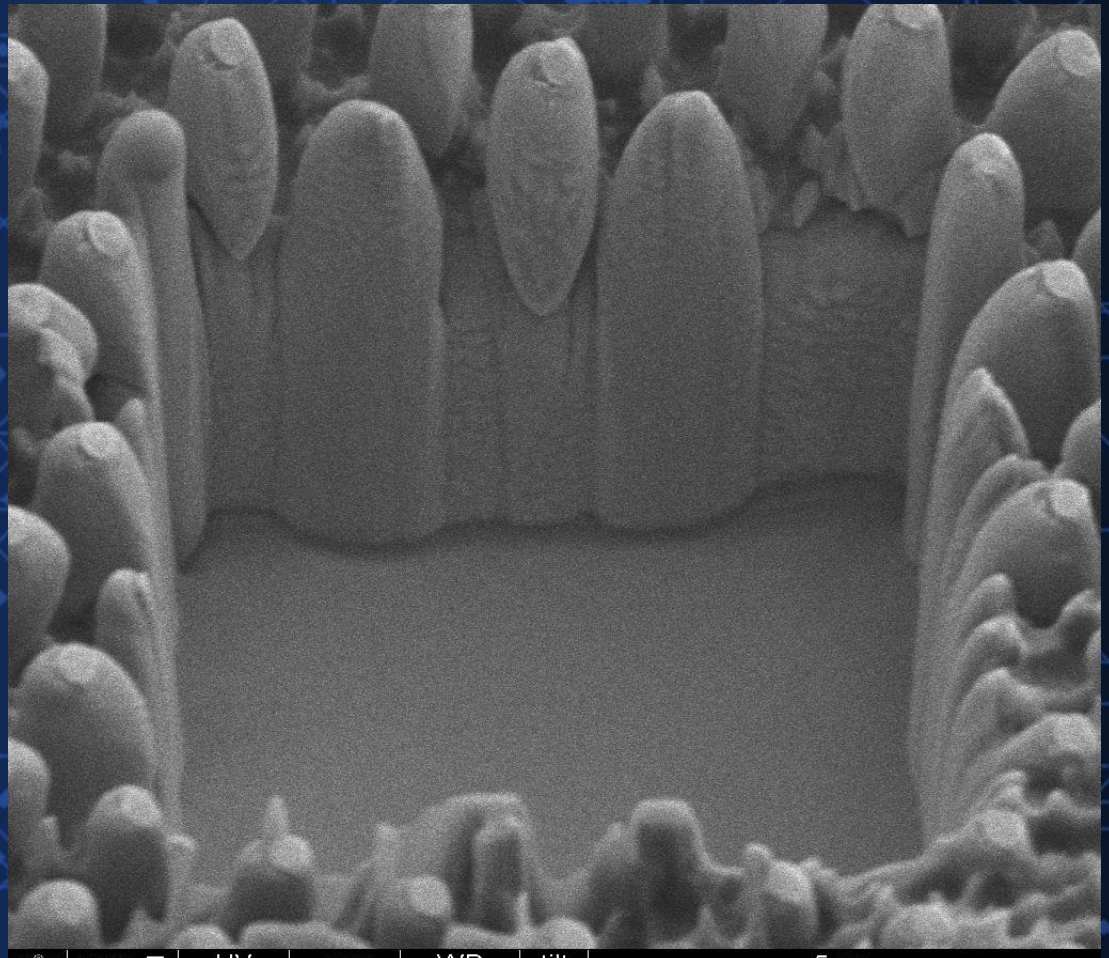


Orig. Mag (3"x4"image): 4.9 KX
Instrument : see NIST declaimer
Submitted by: Andrei Kolmakov
Affiliation: NIST

Sponsored by: zyvex LABS

NIST declaimer Certain commercial products or company names are identified here to describe our study adequately. Such identification is not intended to imply recommendation or endorsement by the National Institute of Standards and Technology, nor is it intended to imply that the products or names identified are necessarily the best available for the purpose.

2021 EIPBN MicroGraph Contest



Micrograph Title:
Knights of the Rectangular Table

Description:
These are PDMS pillars with cobalt on top.

Orig. Mag (3"x4"image): 8 KX
Instrument : FEI Quanta 3D FEG
Submitted by: Zhiren Luo
Affiliation: University of Texas at Austin

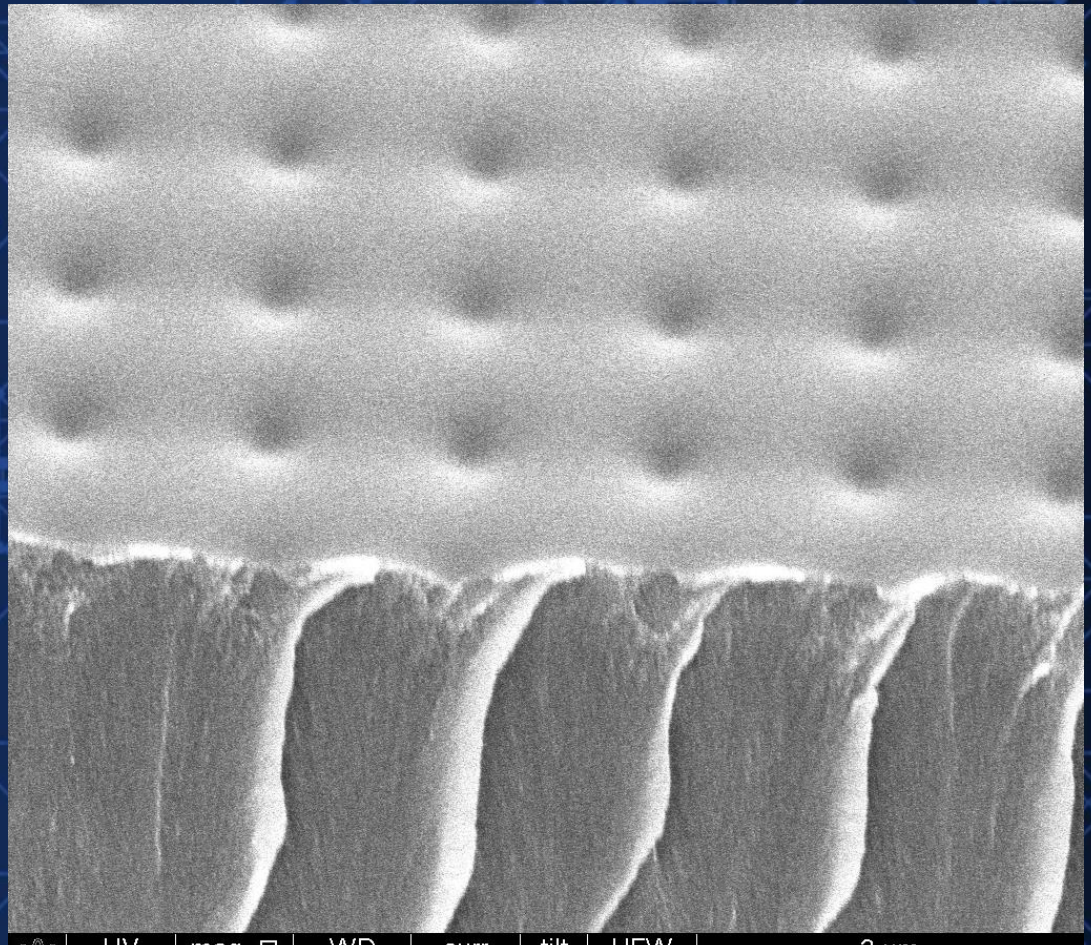
Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Soda crackers

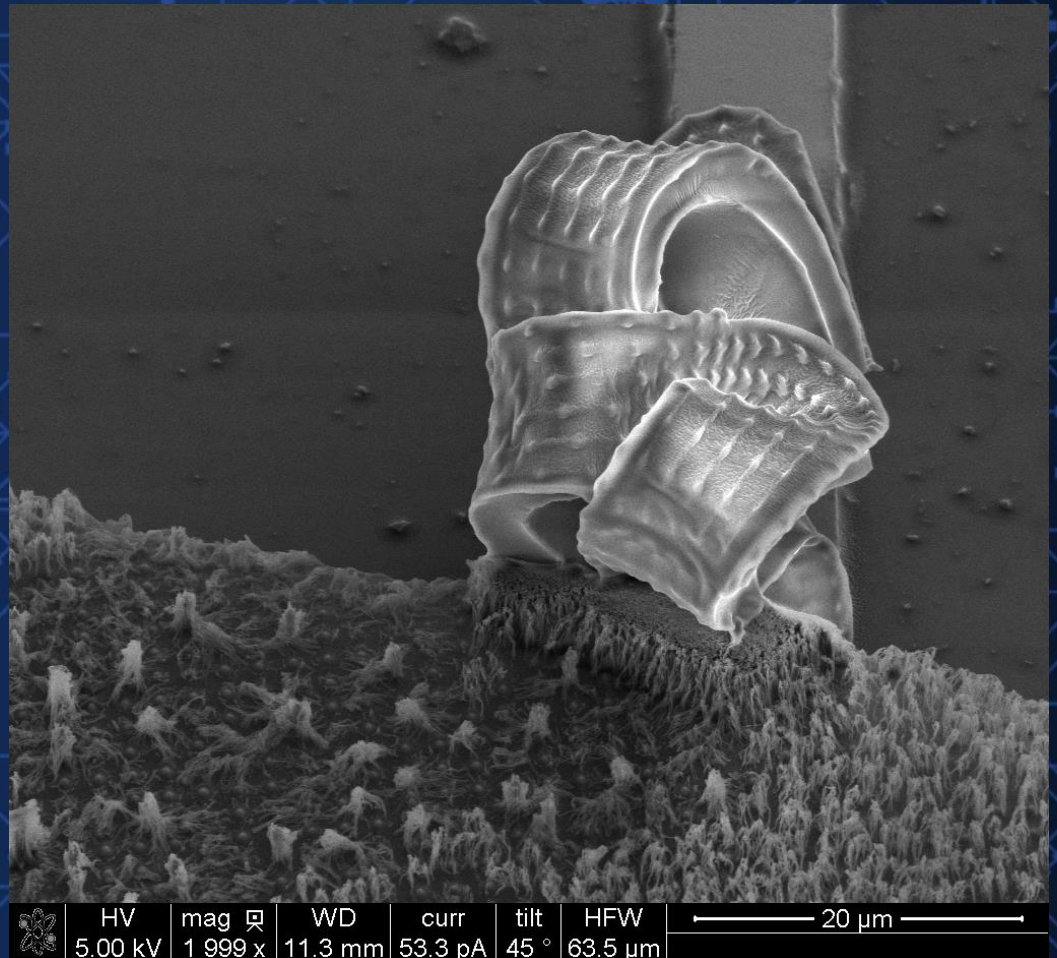
Description:
The SU-8 mold with over exposure.

Orig. Mag (3"x4"image): 12 KX
Instrument : FEI Quanta 3D FEG
Submitted by: Zhiren Luo
Affiliation: University of Texas at Austin



Sponsored by:

2021 EIPBN MicroGraph Contest



Micrograph Title:
Twisted micro-octopus

Description:
Some part of PDMS pattern was peeled and twisted after RIE etching.

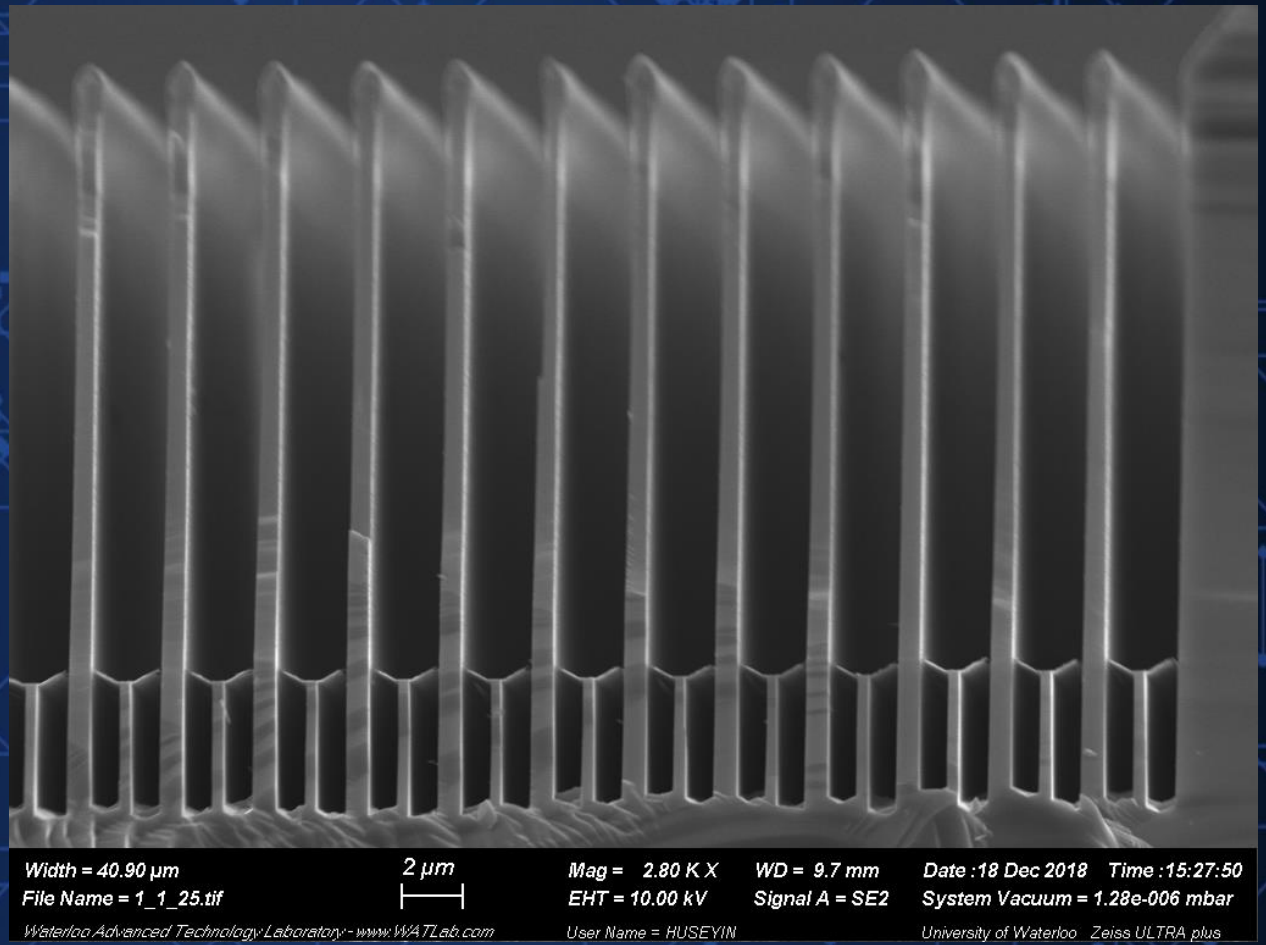
Orig. Mag (3"x4"image): 2 KX
Instrument : FEI Quanta 3D FEG
Submitted by: Zhiren Luo
Affiliation: University of Texas at Austin

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Nanotrenches within microtrenches

Description:
Nano- and micro-trenches in silicon.



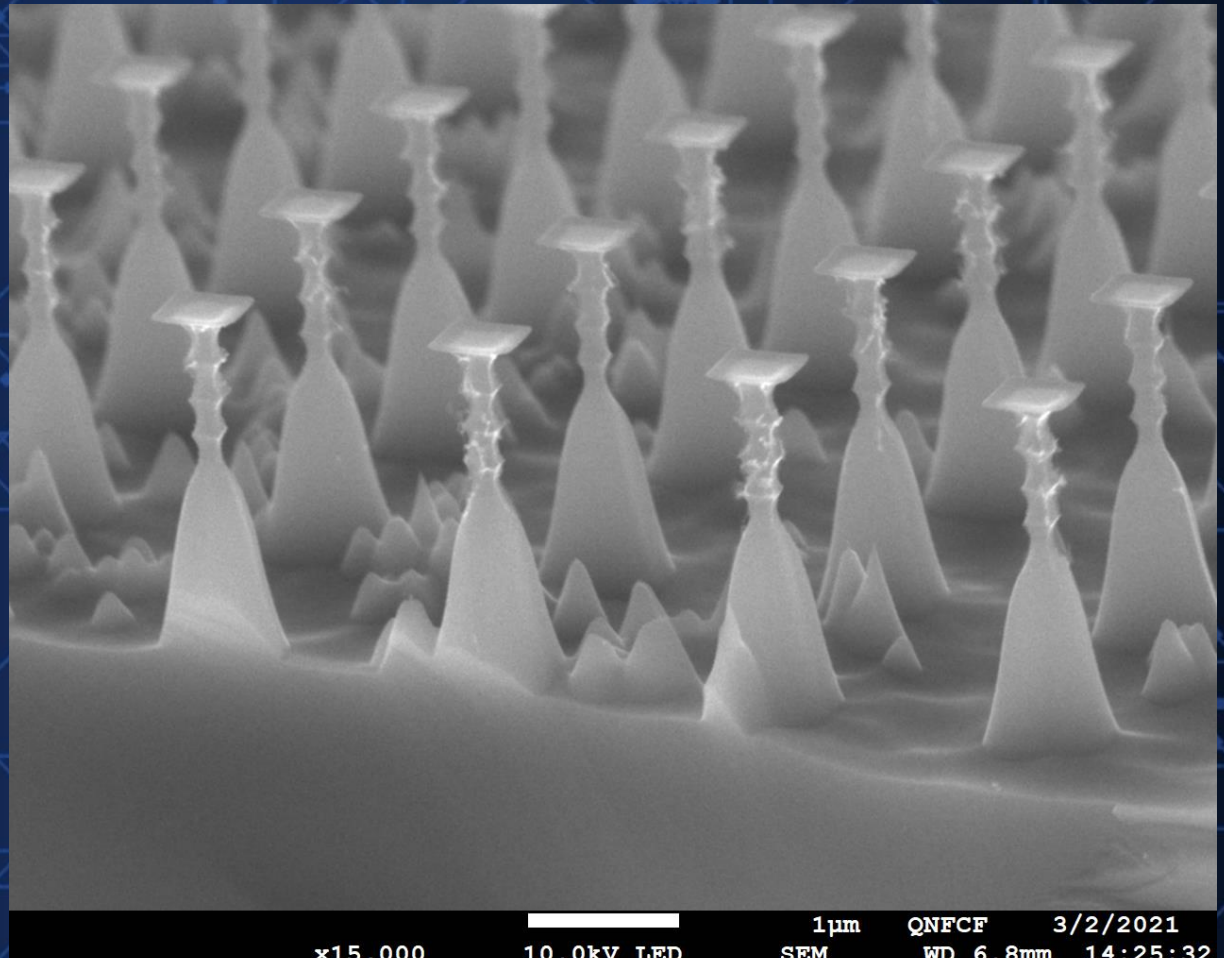
Orig. Mag (3"x4"image): 2.8KX
Instrument : Zeiss ULTRA plus
Submitted by: Huseyin Ekinci
Affiliation: University of Waterloo

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest

Micrograph Title:
Crystal goblets set to dry

Description:
Pillar fabrication in Silicon.

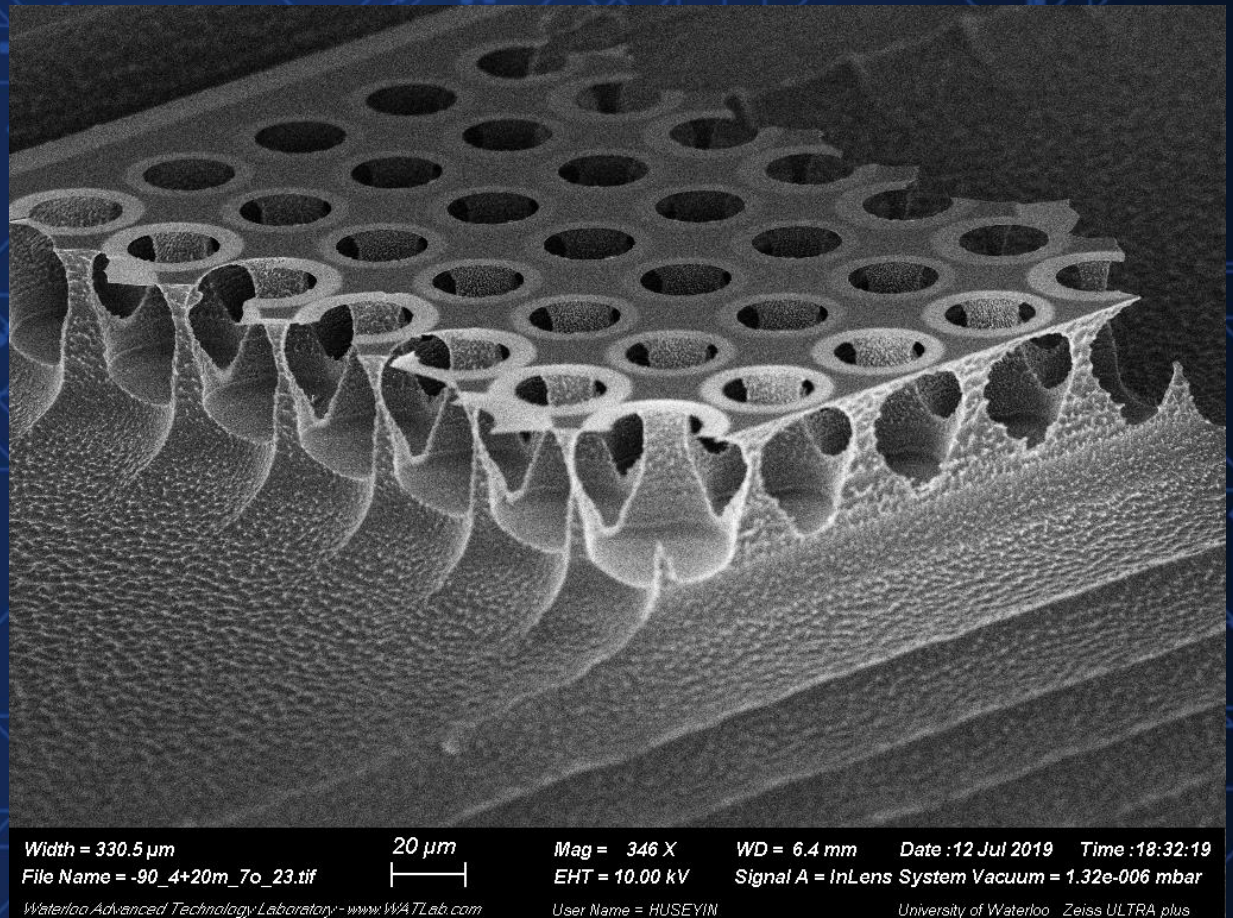


Orig. Mag (3"x4"image): 15KX
Instrument : JEOL SEM JSM-7200F
Submitted by: Huseyin Ekinci
Affiliation: University of Waterloo

2021 EIPBN MicroGraph Contest

Micrograph Title:
Whack-a-mole

Description:
Fabrication of holes in microscale.



Orig. Mag (3"x4"image): 346X
Instrument : Zeiss ULTRA plus
Submitted by: Huseyin Ekinci
Affiliation: University of Waterloo

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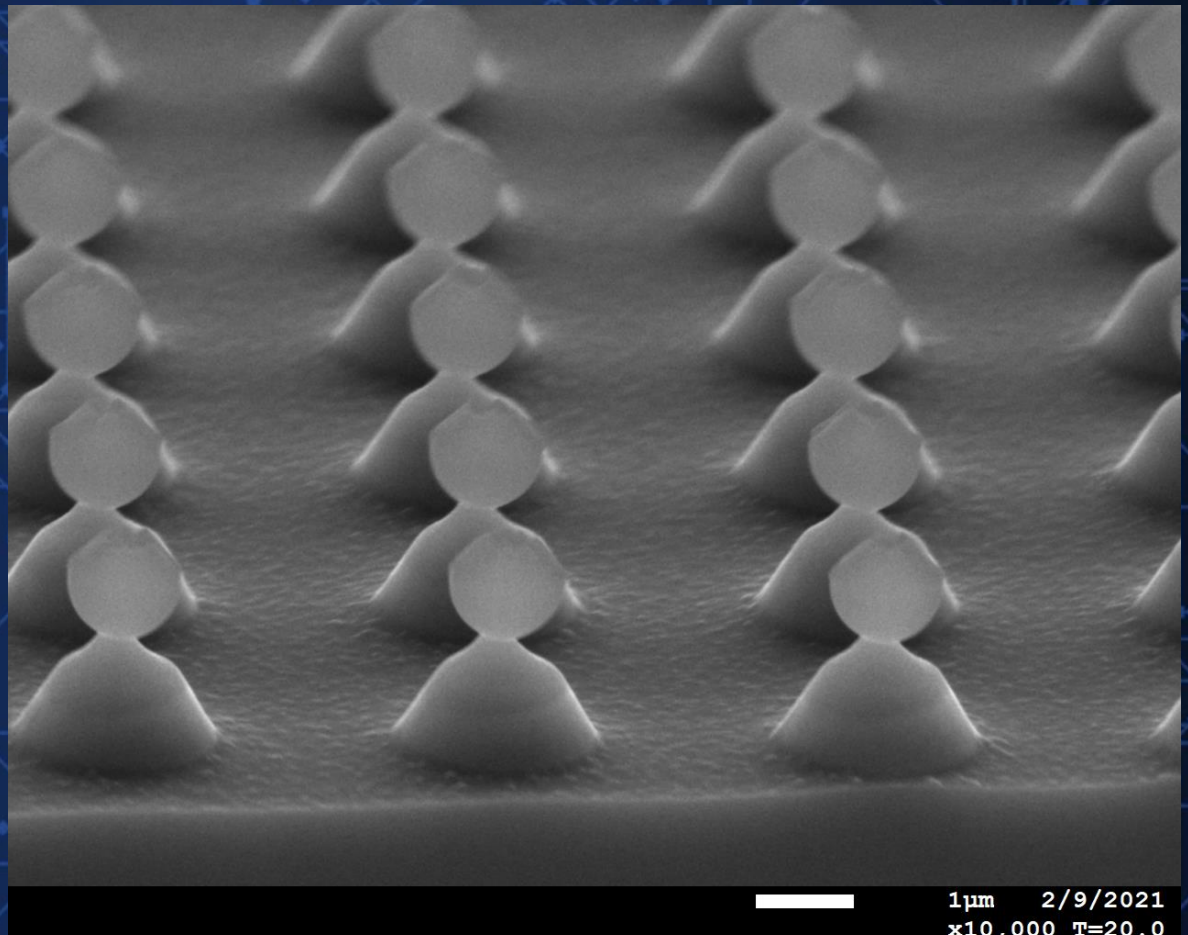
Micrograph Title:
Synchronized swimmers

Description:
Etching silicon with a mask.

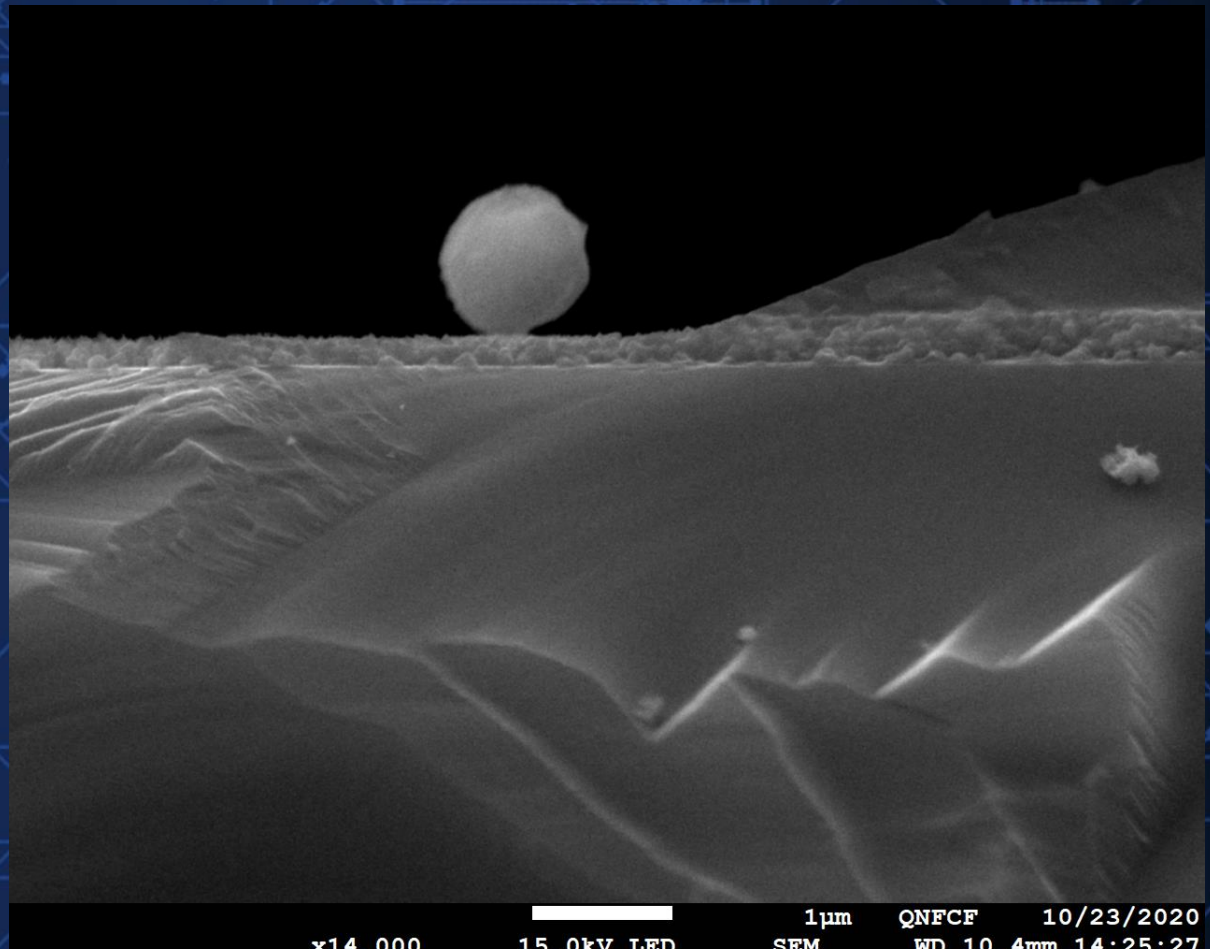


Orig. Mag (3"x4"image): 10KX
Instrument : JEOL SEM JSM-7200F
Submitted by: Huseyin Ekinci
Affiliation: University of Waterloo

2021 EIPBN MicroGraph Contest

Micrograph Title:
Ball rolling down a hill

Description:
Cleaving artifact.



Orig. Mag (3"x4"image): 14KX
Instrument : JEOL SEM JSM-7200F
Submitted by: Huseyin Ekinci
Affiliation: University of Waterloo

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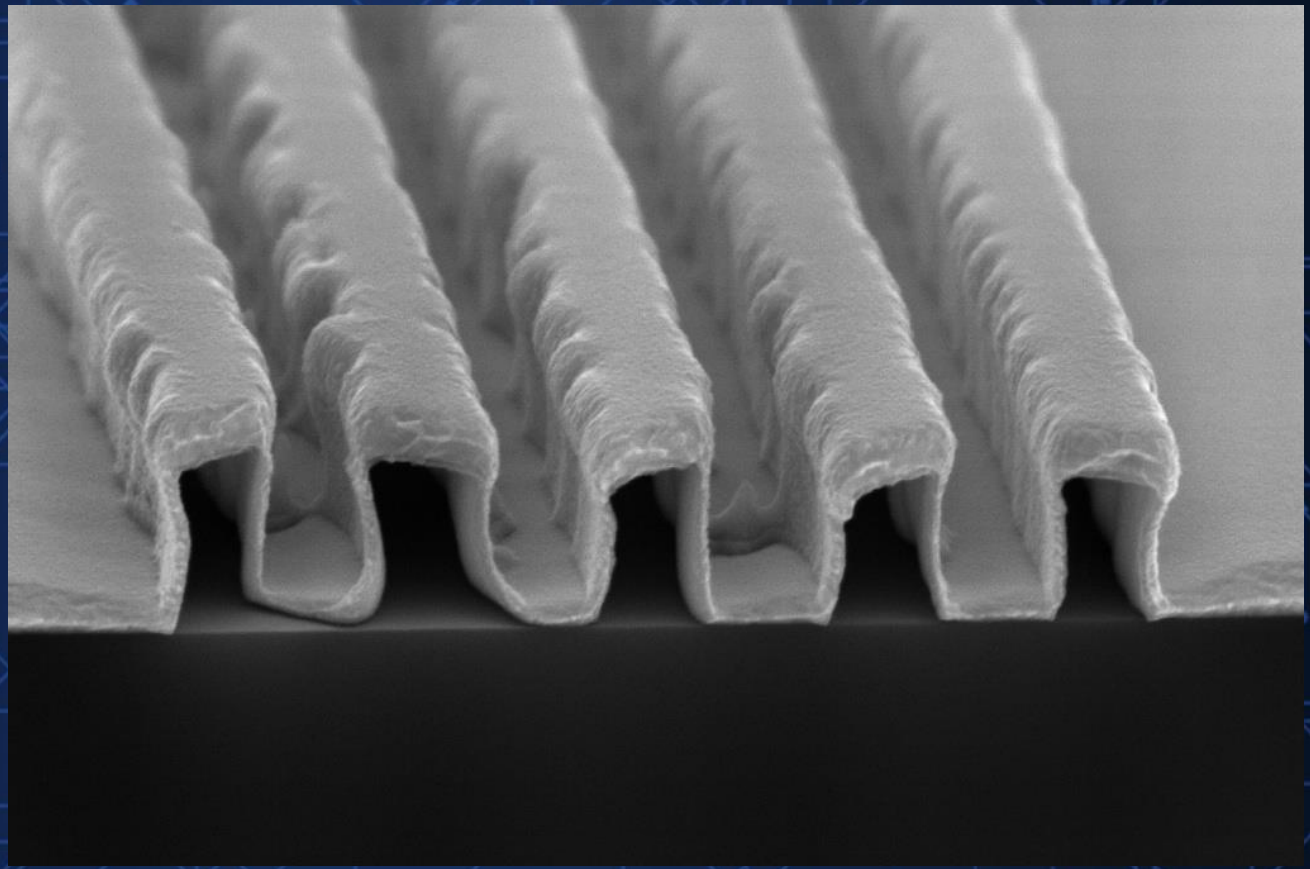

Micrograph Title:
Just Too Metal

Description:
Metal deposition creeps up photoresist wall. Photoresist is completely dissolved, leaving the 3D metal structure instead of lifting off the metal like it should. 1 micron dense line/space.

Orig. Mag (3"x4"image): 12,000 magnification, 70 degree tilt
Instrument : Carl Zeiss EVO 50 SEM
Submitted by: Jeremy Golden / Tyler Wozmak
Affiliation: KemLab Photoresist / MicroVision Labs

Sponsored by: zyvex LABS

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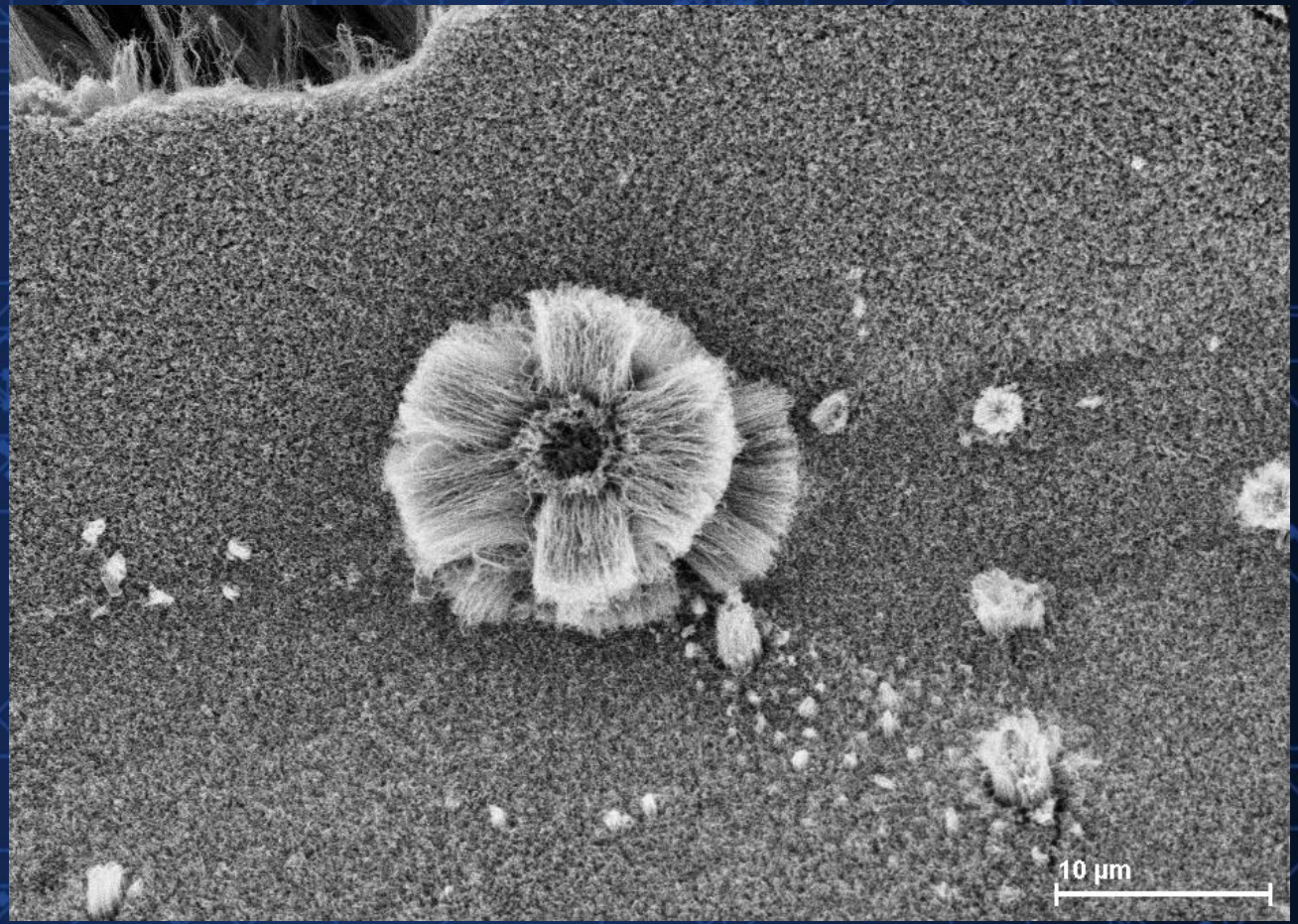


Micrograph Title:
Poppy / Flanders Fields

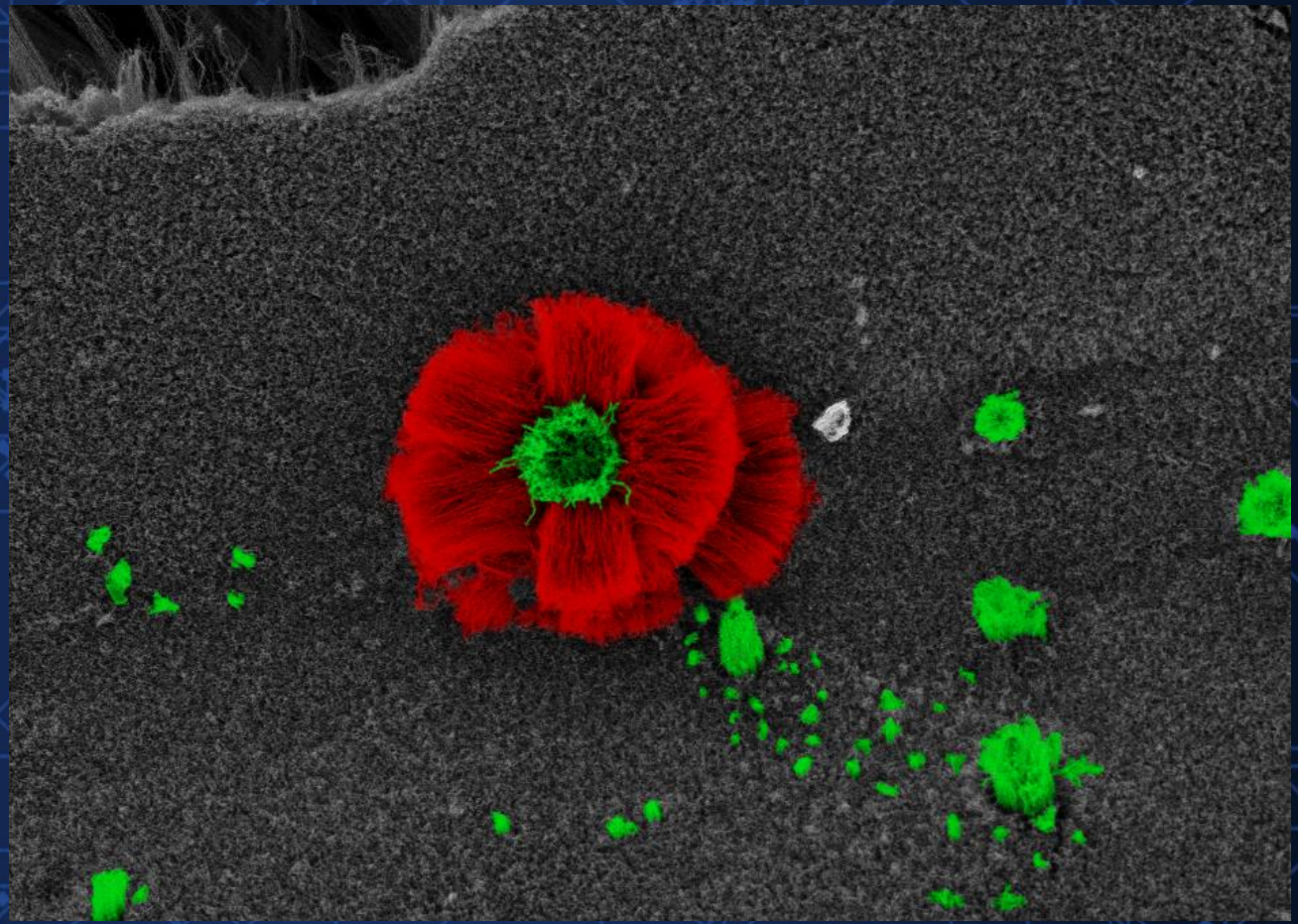
Description:
Top surface of a vertically-aligned carbon nanotube forest. Erratic local growth defects lead to interesting microscopic structures.

Orig. Mag (3"x4"image): 1.76kX
Instrument : Zeiss Sigma VP

Submitted by: Mike Chang, Alireza Nojeh
Affiliation: QMI/ECE, UBC

Sponsored by: zyvex LABS

2021 EIPBN MicroGraph Contest



Micrograph Title:
Poppy / Flanders Fields (Colored)

Description:
Top surface of a vertically-aligned carbon nanotube forest. Erratic local growth defects lead to interesting microscopic structures.

Orig. Mag (3"x4"image): 1.76kX
Instrument : Zeiss Sigma VP

Submitted by: Mike Chang, Alireza Nojeh
Affiliation: QMI/ECE, UBC

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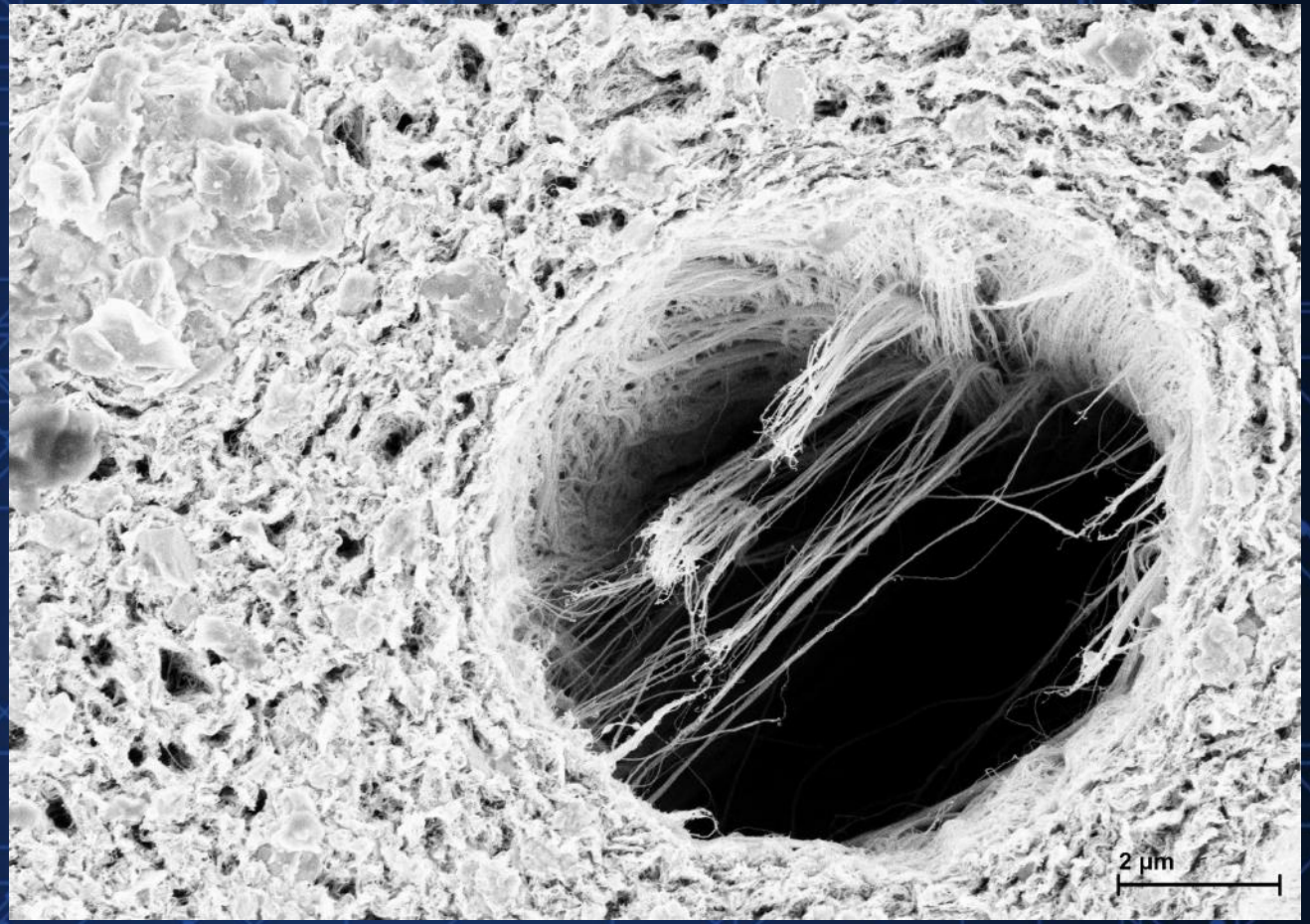
Micrograph Title:
Abandoned Well

Description:
An oversaturated micrograph of an empty hole in a carbon nanotube forest due to catalyst film defect.



Orig. Mag (3"x4"image): 7.14kX
Instrument : Zeiss Sigma VP
Submitted by: Mike Chang, Alireza Nojeh
Affiliation: QMI/ECE, UBC

2021 EIPBN MicroGraph Contest

Micrograph Title:
A Fluffy Mess / Micro-Loofah

Description:
A tangled up strand of carbon nanotubes.

Orig. Mag (3"x4"image): 10.03kX
Instrument : Zeiss Sigma VP
Submitted by: Mike Chang, Alireza Nojeh
Affiliation: QMI/ECE, UBC

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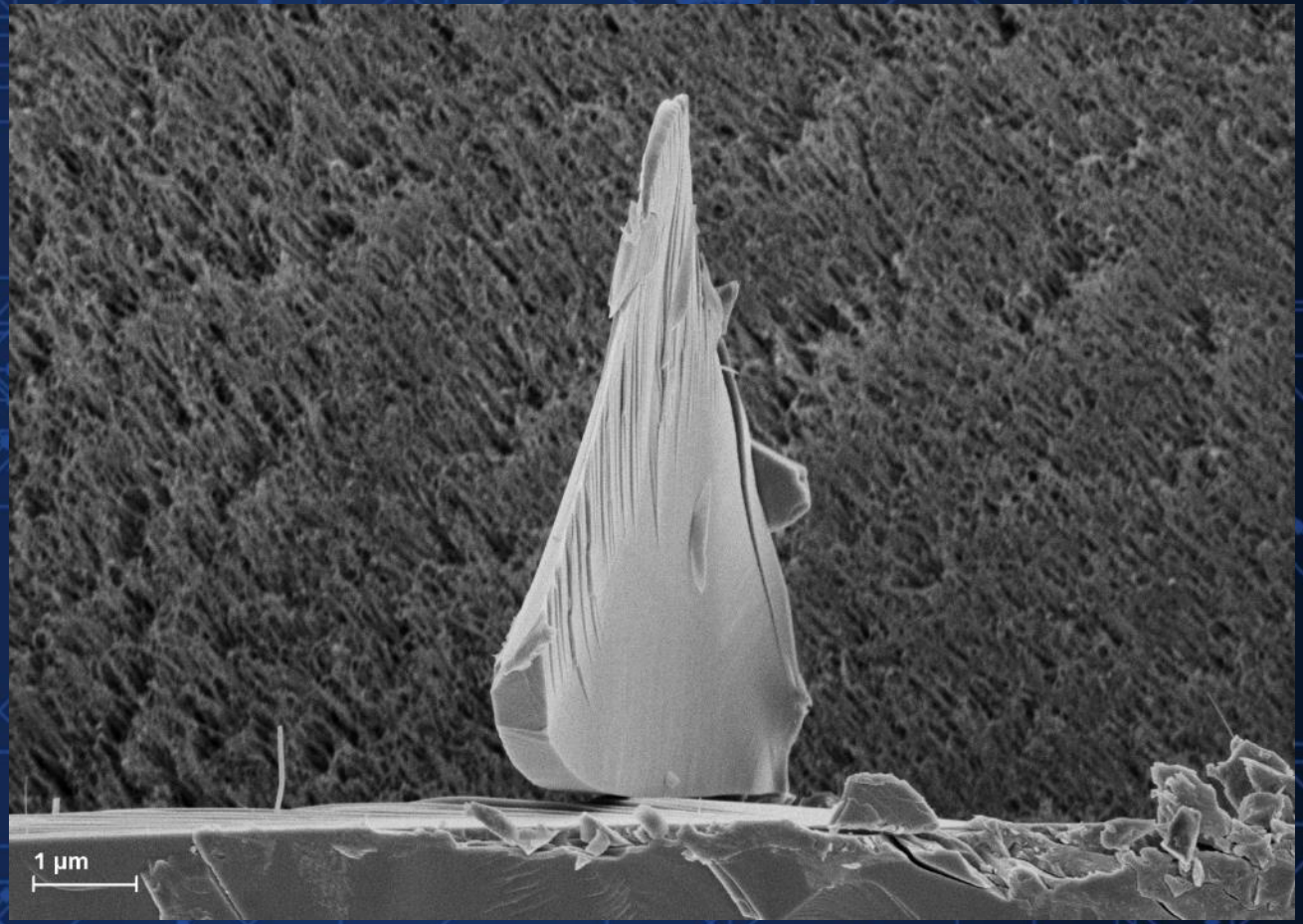
Micrograph Title:
Spinnaker

Description:
A broken scrap of silicon substrate resembling a spinnaker.



Orig. Mag (3"x4"image): 9.17kX
Instrument : Zeiss Sigma VP
Submitted by: Mike Chang, Alireza Nojeh
Affiliation: QMI/ECE, UBC

Sponsored by: zyvex LABS

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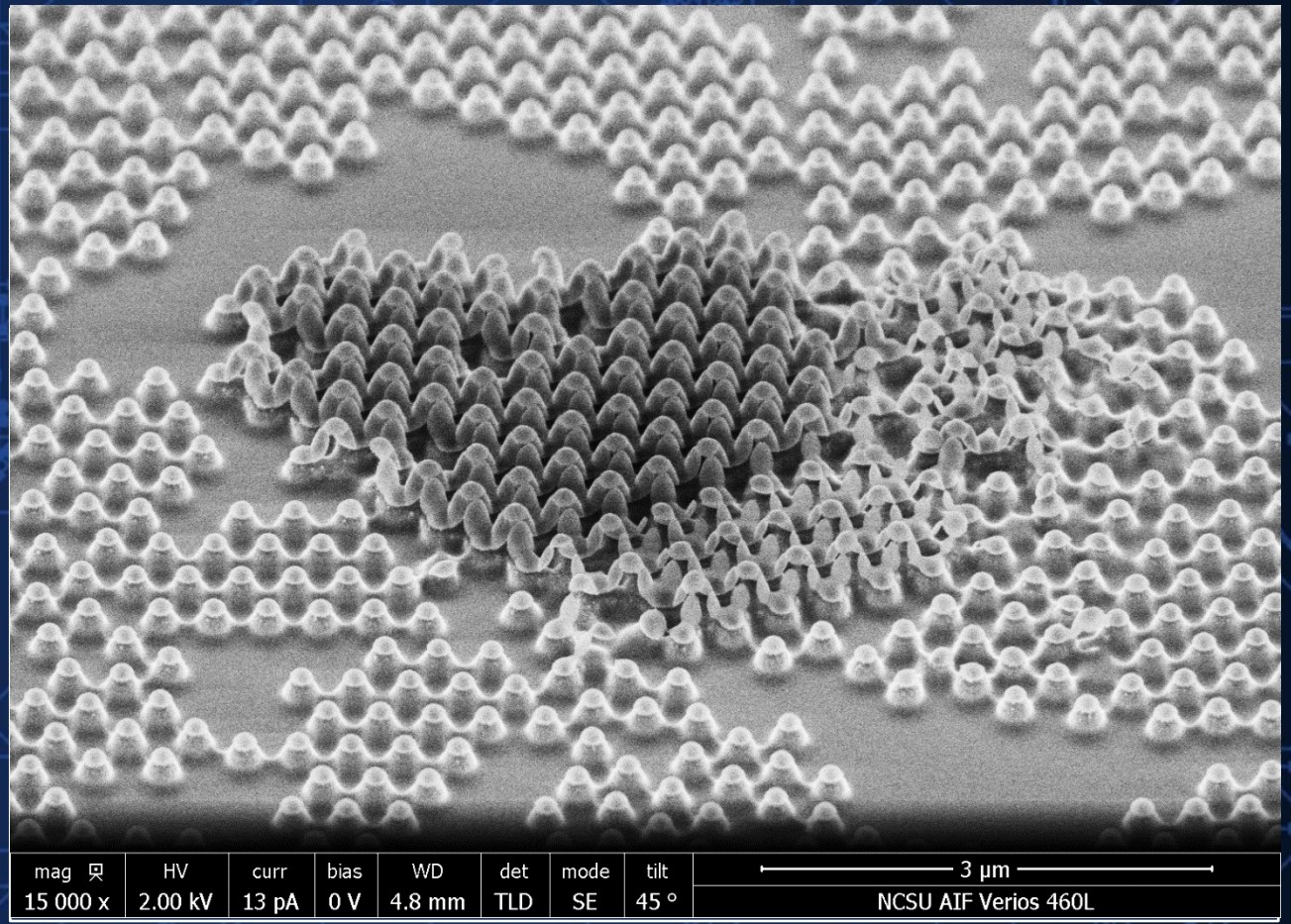
Micrograph Title:
Seed and Grow

Description:
Not every hard work is rewarded

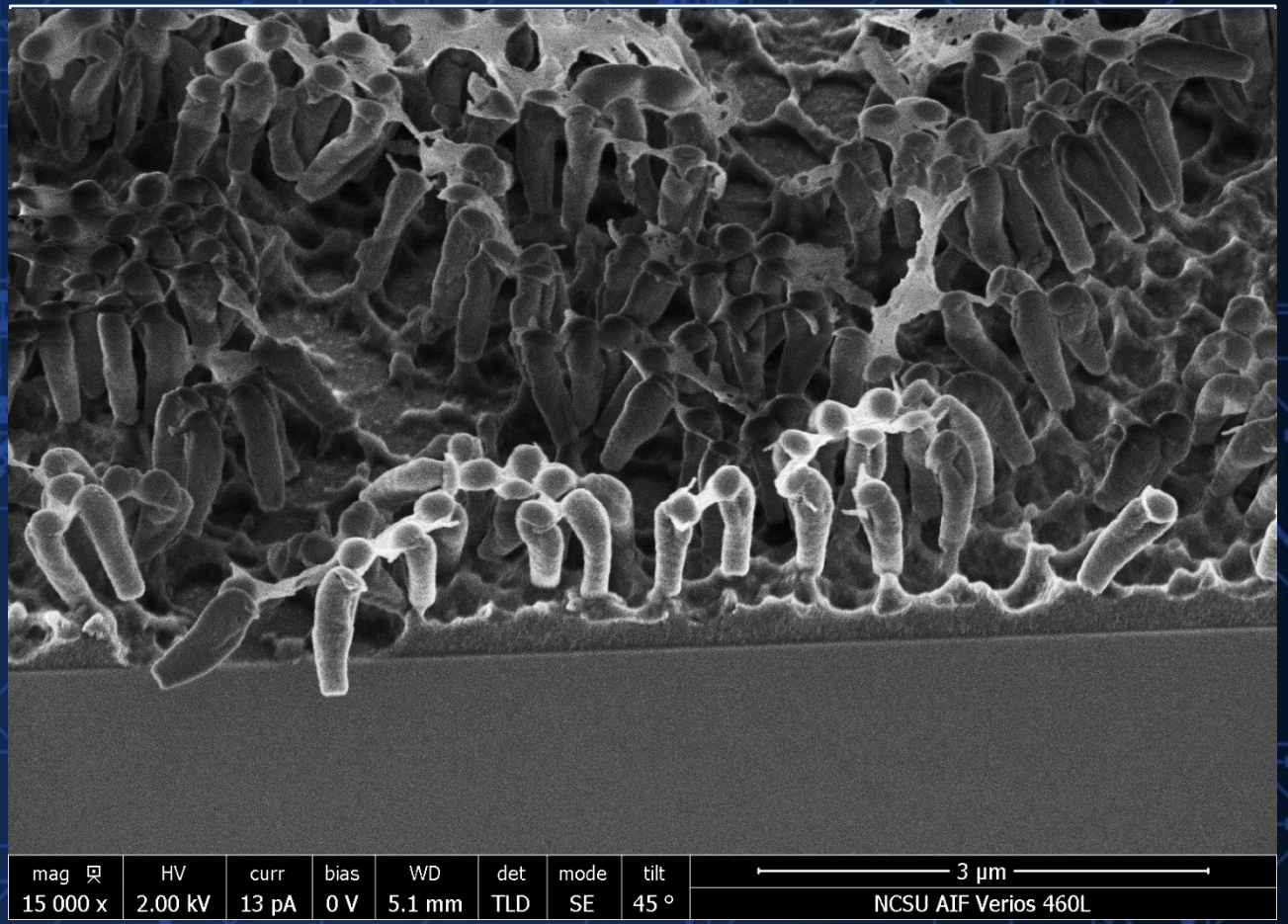


Orig. Mag (3"x4"image): 15KX
Instrument : Verios 460L
Submitted by: I-Te Chen
Affiliation: The University of Texas at Austin

2021 EIPBN MicroGraph Contest

Micrograph Title:
Social Distance!

Description:
This is how virus spread



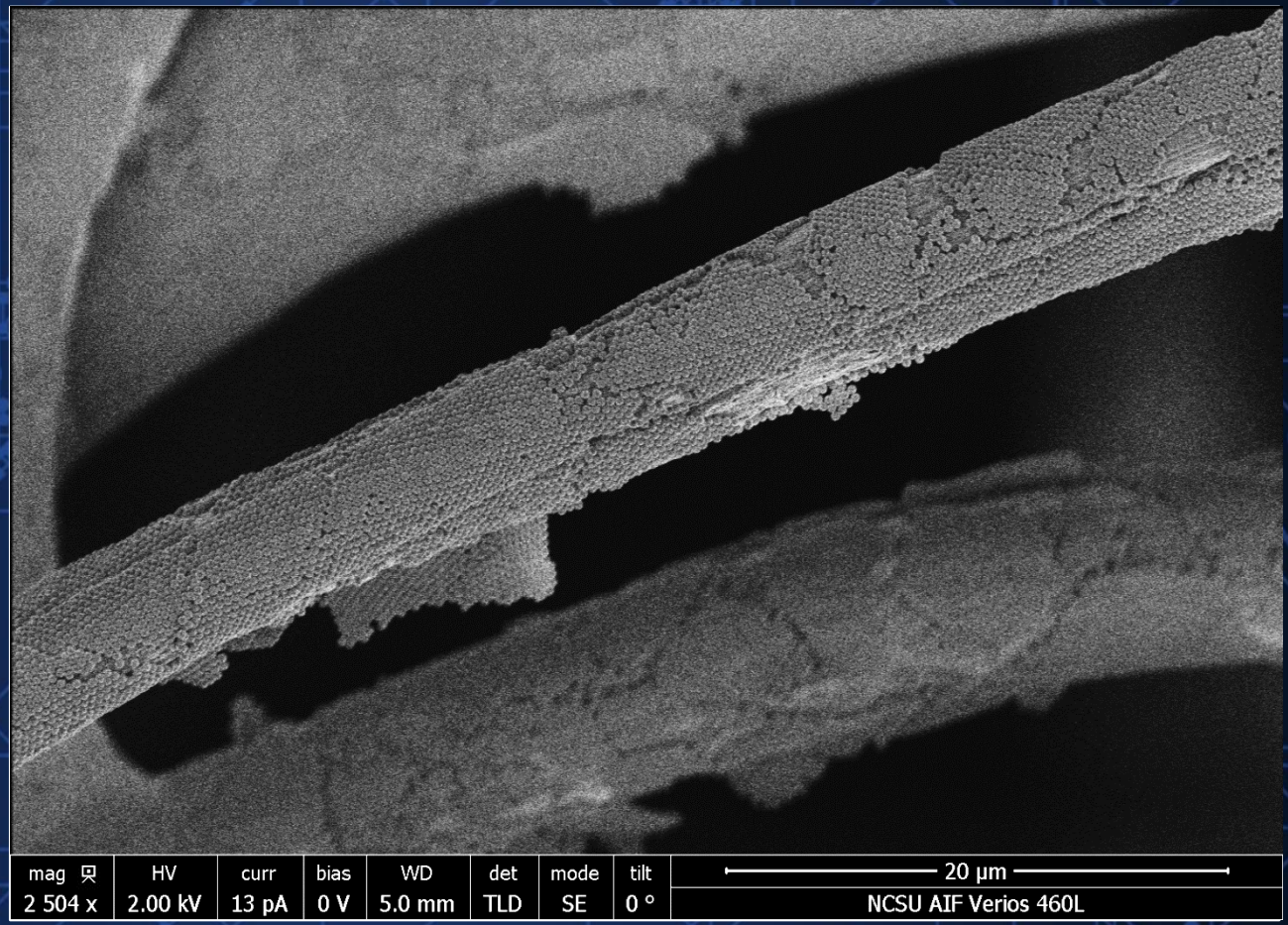
Orig. Mag (3"x4"image): 15KX
Instrument : Verios 460L
Submitted by: I-Te Chen
Affiliation: The University of Texas at Austin

Sponsored by:

2021 EIPBN MicroGraph Contest

Micrograph Title:
Nano Corn.

Description:
Quantity matter!



Orig. Mag (3"x4"image): 2.5KX
Instrument : Verios 460L
Submitted by: I-Te Chen
Affiliation: The University of Texas at Austin

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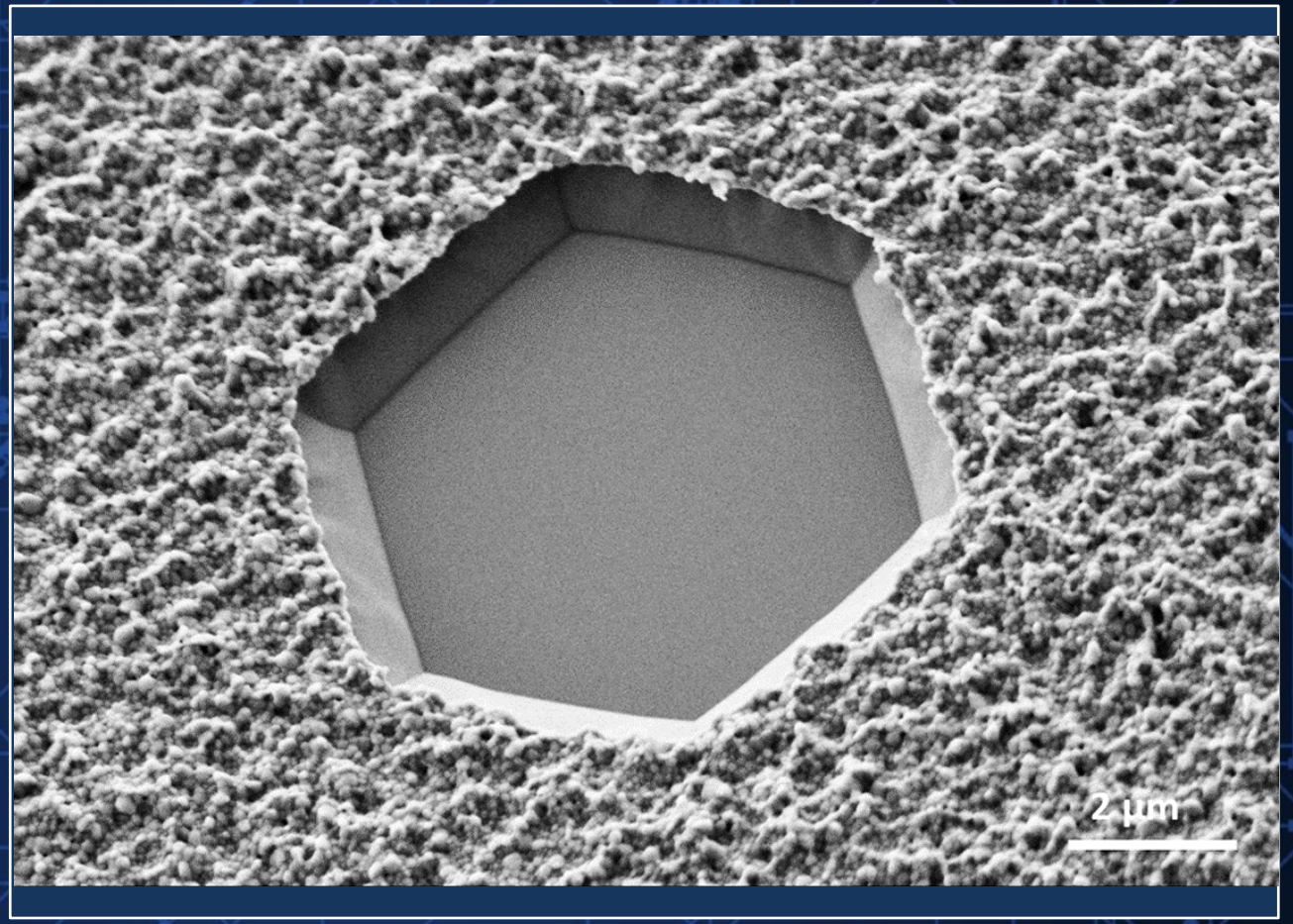
Micrograph Title:
Discovering Hexagonal Ruins

Description:
AlN film on SiC substrate after High Thermal Annealing in 1500◦C.



Orig. Mag (3"x4"image): 20KX
Instrument : ZEISS SEM LEO1530

Submitted by: Sofia Aslanidou
Affiliation: IMB-CNM-CSIC / UAB

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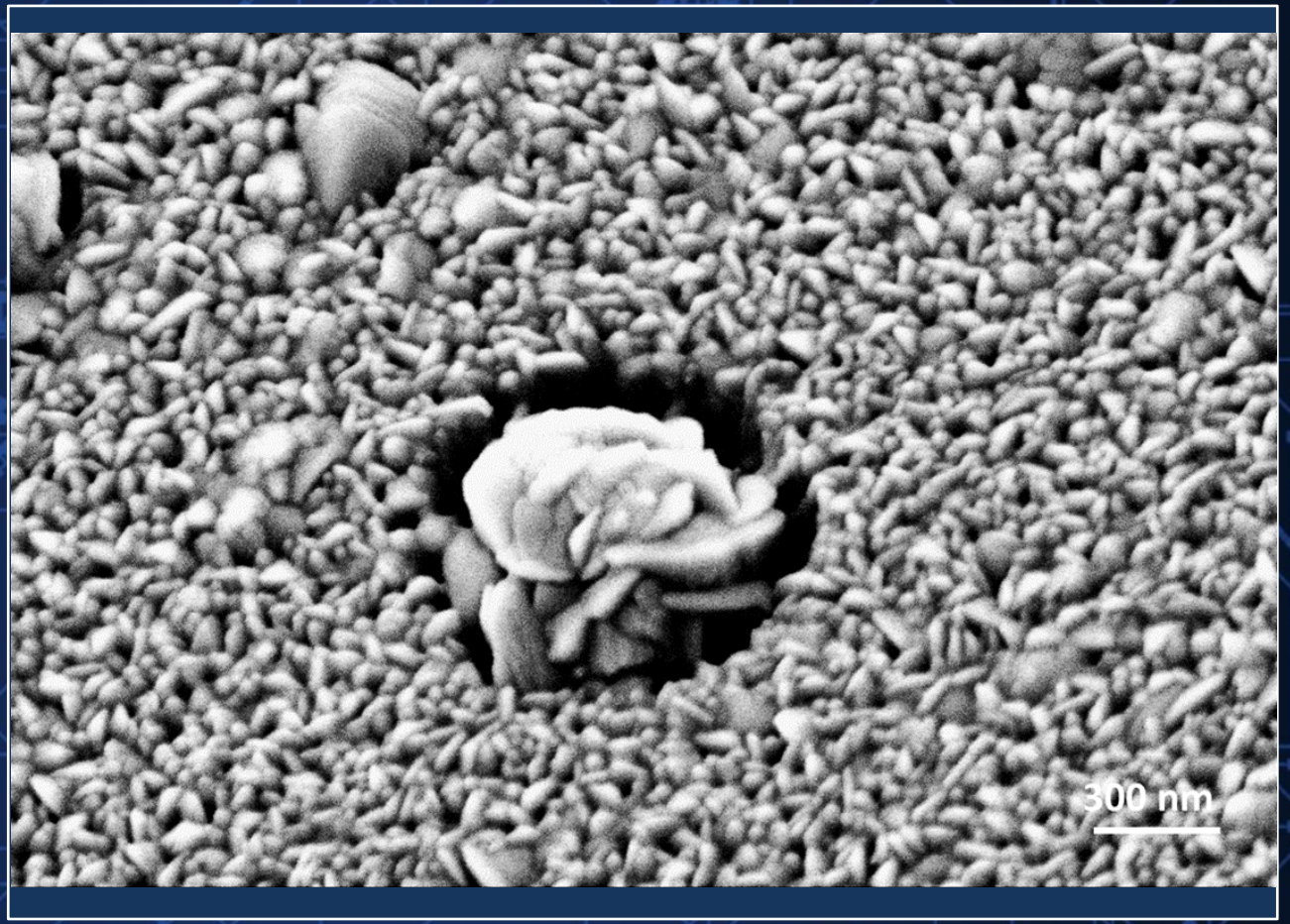
Micrograph Title:
Roses are Grey

Description:
AlN film Sputtered on SiC Substrate.



Orig. Mag (3"x4"image): 100KX
Instrument : ZEISS SEM LEO1530

Submitted by: Sofia Aslanidou
Affiliation: IMB-CNM-CSIC / UAB

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Micrograph Title:
One lonely tree in the sea.

Description:
Cross section SEM showing the interface of Ni metal contact on N+ implanted SiC substrate.

Orig. Mag (3"x4"image): 50KX
Instrument : ZEISS SEM LEO1530

Submitted by: Sofia Aslanidou
Affiliation: IMB-CNM-CSIC / UAB