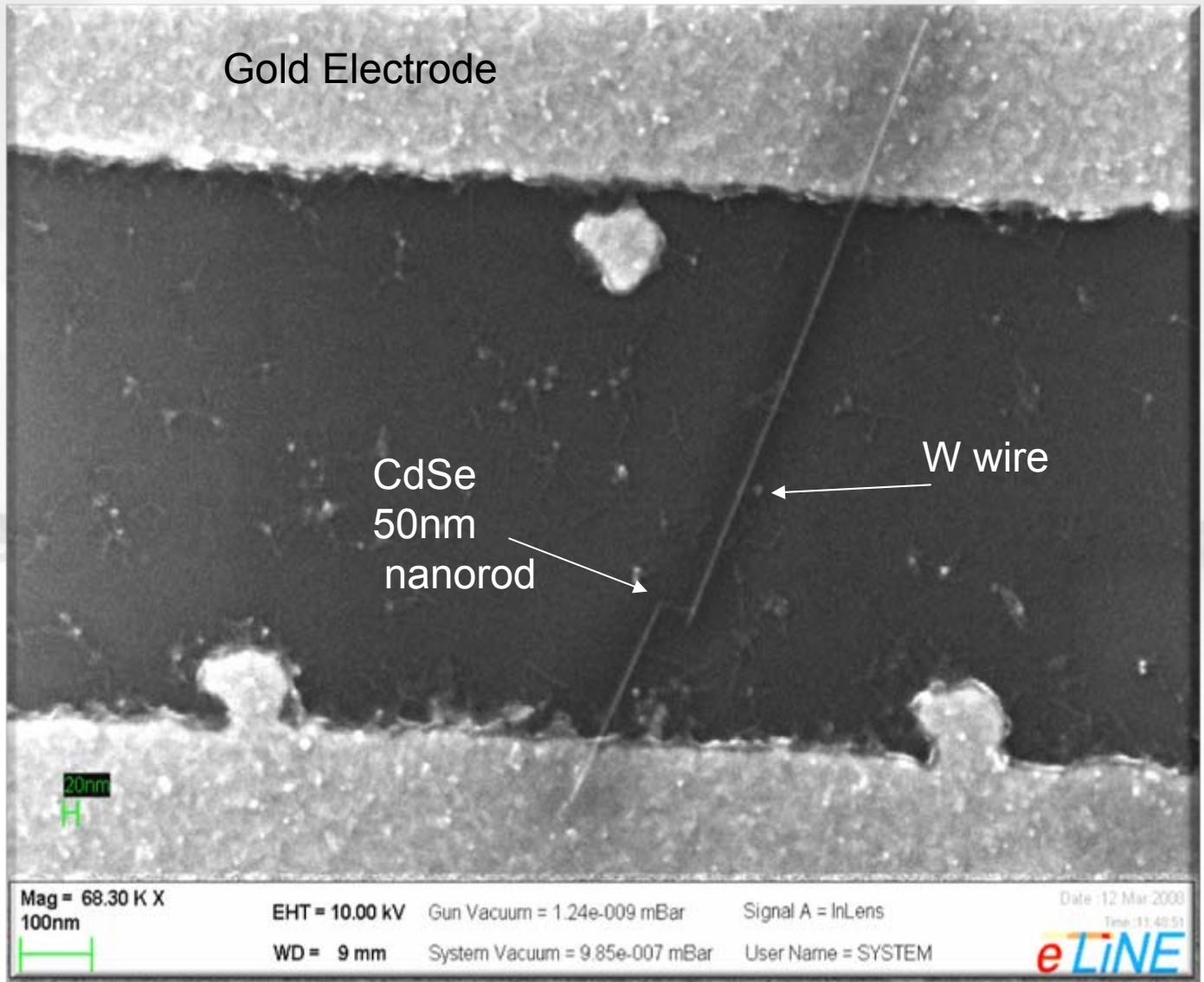




2009 EIPBN MicroGraph Contest



Micrograph Title:
Catching a nanorod.

Description:
W lines written by Electron Beam Induced Deposition were used to wire a 50nm CdSe nanorod to gold electrodes.

Magnification (3"x4" image): 68.3K

Instrument (Make and Model): Raith e_line

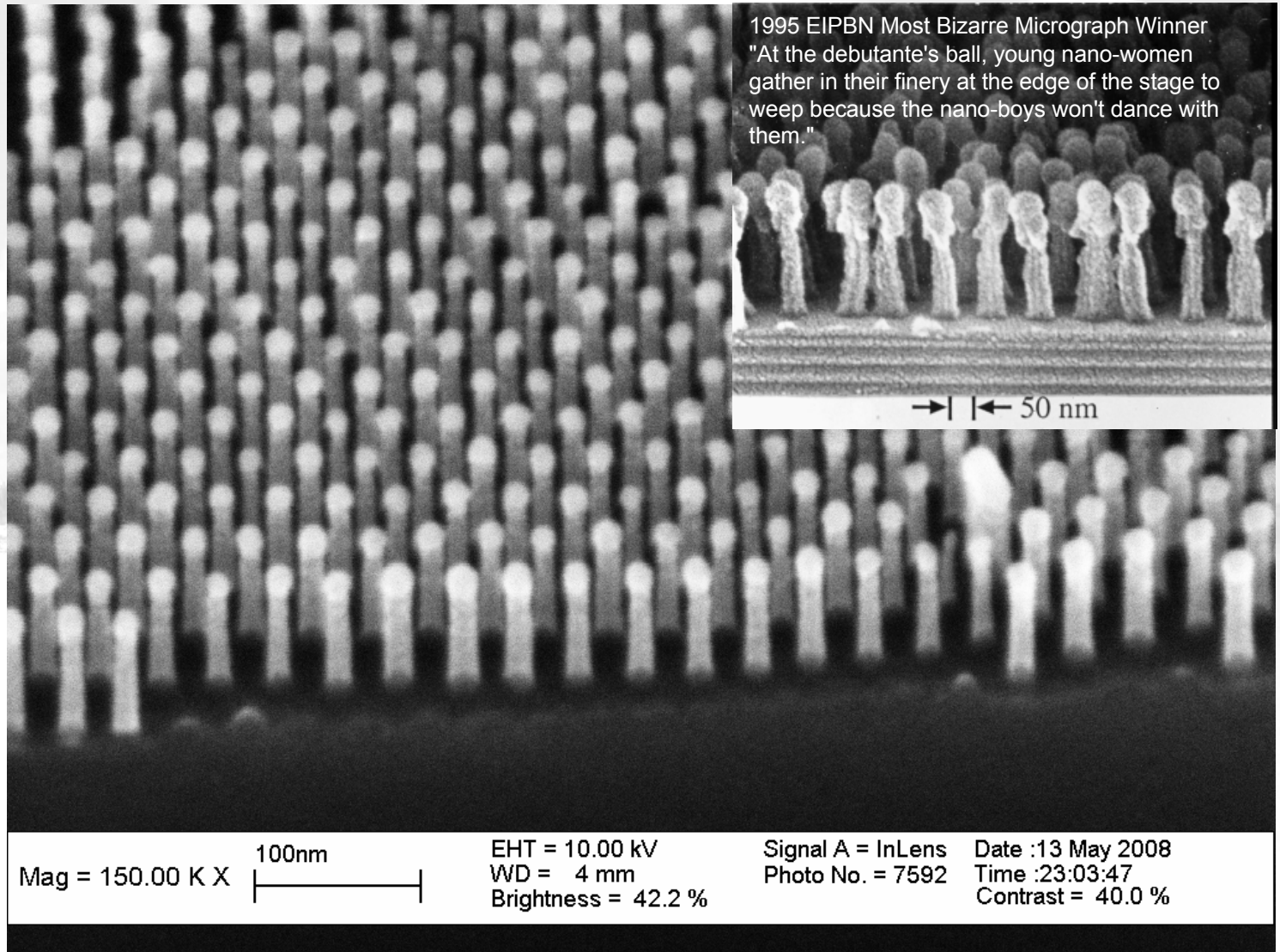
Submitted by: Yigal Lilach & Hadar Steinberg **Affiliation:** The Hebrew university of Jerusalem, Israel.



2009 EIPBN MicroGraph Contest

Micrograph Title:
After 14 years,
their children are
still dancing...

Description:
Si nano-rods
etched via Cr
hardmask formed
by copolymer self-
assembly and lift-
off process.
(Diameter is only
~20nm. They are
slightly smaller
than their
ancestors.)



Magnification (3"x4" image): 150kX
Submitted by: Chi-Chun Liu

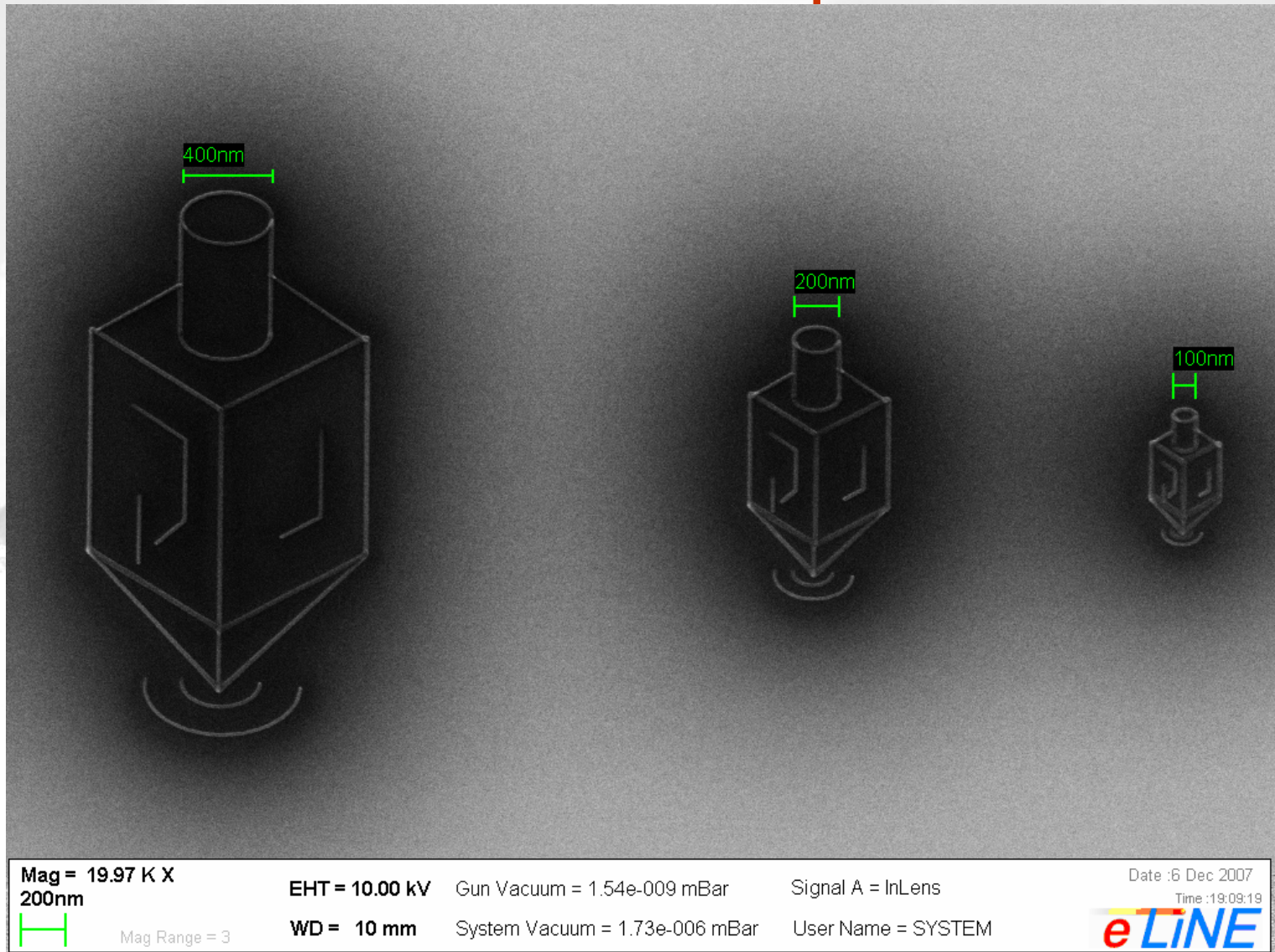
Instrument (Make and Model): LEO1550VP
Affiliation: Univ. Wisconsin-Madison



2009 EIPBN MicroGraph Contest

**Micrograph
Title:
EBIDreidel**

**Description:
Pt lines written
by Electron
Beam Induced
Deposition.
The line
thickness is
below 20nm.**



**Magnification (3"x4" image): 19.97K
Submitted by: Yigal Lilach**

**Instrument (Make and Model): Raith e_line
Affiliation: The Hebrew university of Jerusalem, Israel.**



2009 EIPBN MicroGraph Contest

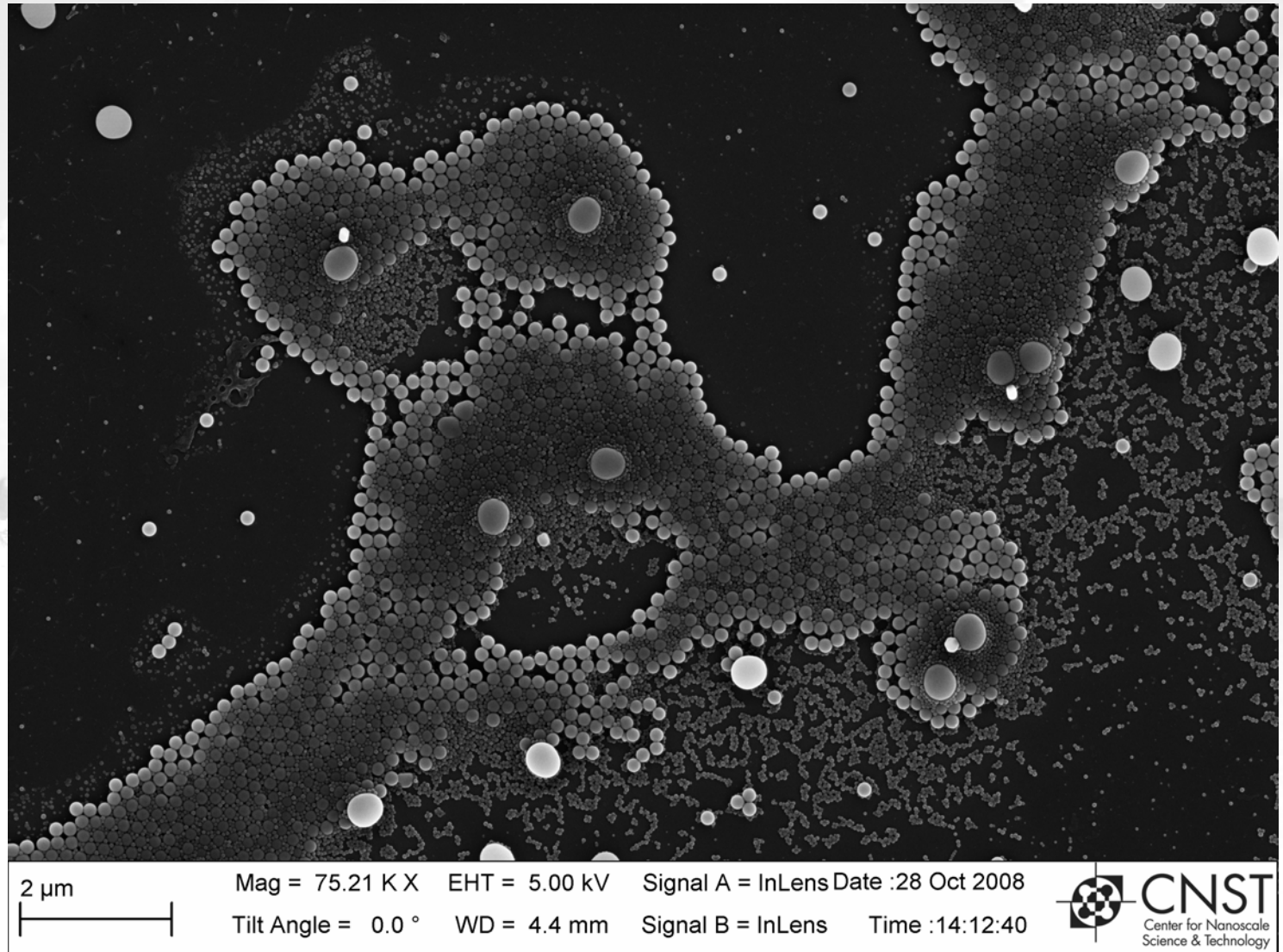
Micrograph

Title:

Sigmund the
Sea Monster

Description:

Lurking in the chaotic depths of the nanosea, Sigmund directs spontaneous pattern formation from evaporating nanoparticle suspensions (520 nm, 190 nm, 55 nm diameter polystyrene beads in water).



Magnification (3"x4" image): 75kX
Submitted by: Matthew McMahon

Instrument (Make and Model): Zeiss Ultra 60 SEM
Affiliation: NIST Center for Nanoscale Science and Technology



2009 EIPBN MicroGraph Contest

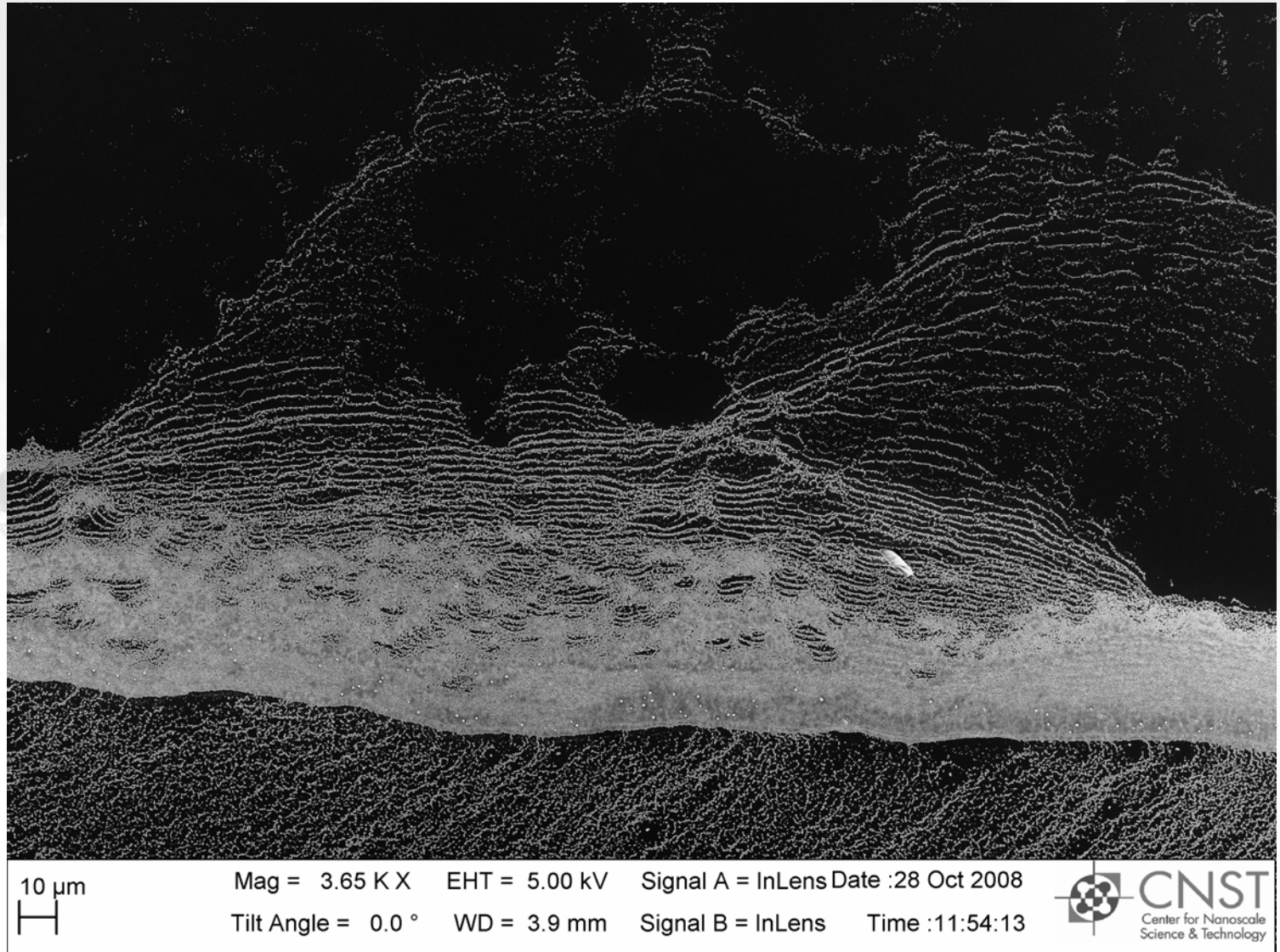
Micrograph

Title:

The Ghost of the Titanic

Description:

In the wake of the furious evaporation of a nanoparticle-laden methanol droplet, we discovered the remains of this stately ship, floating along Pirates-of-the-Caribbean-style. Sigmund did a baaad thing. (190 nm polystyrene beads)



Magnification (3"x4" image): 3650 X

Submitted by: Matthew McMahon

Instrument (Make and Model): Zeiss Ultra 60 SEM

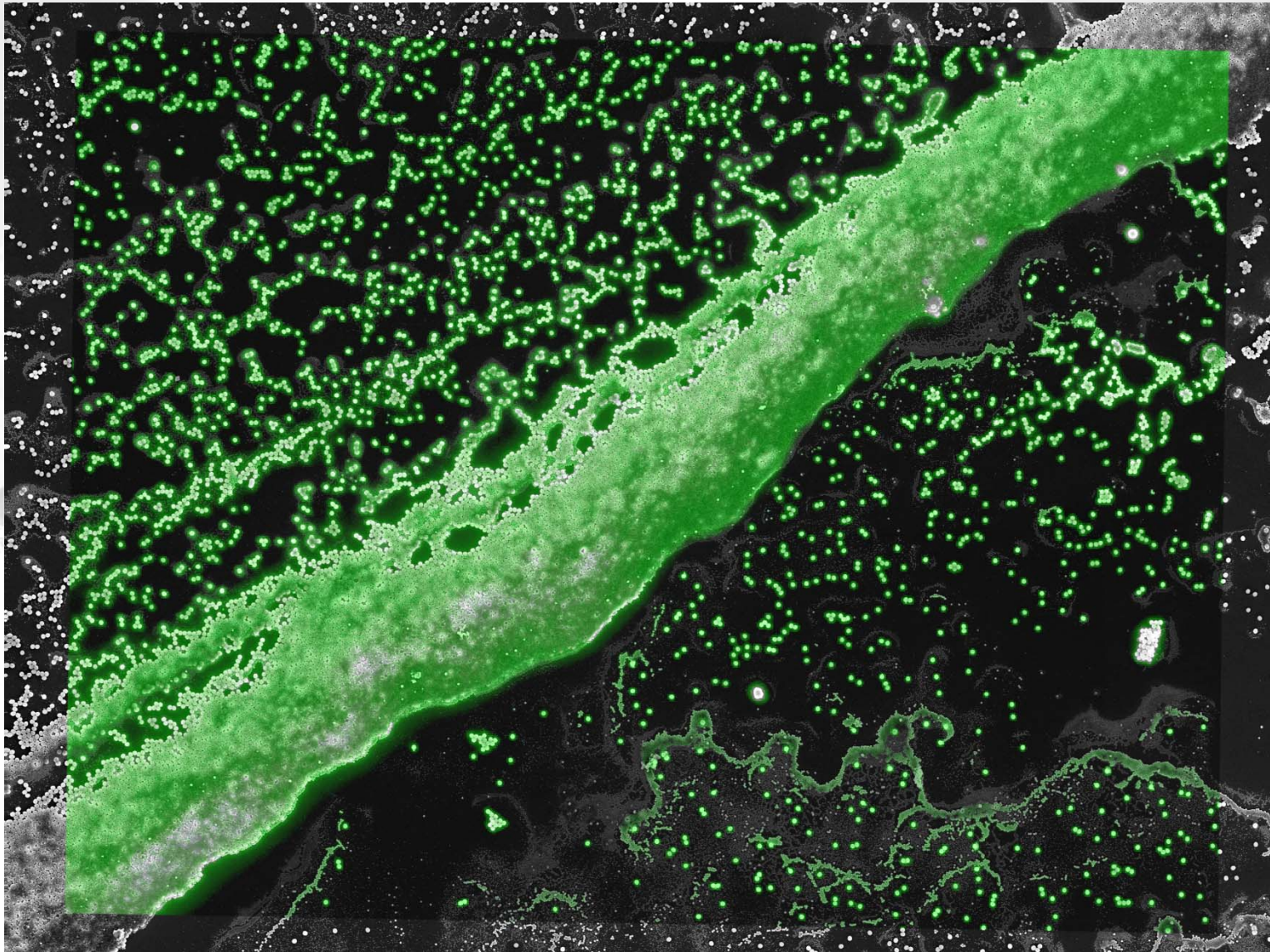
Affiliation: NIST Center for Nanoscale Science and Technology



2009 EIPBN MicroGraph Contest

**Micrograph
Title:**
Space Beach

Description:
Optical
fluorescence
microscopy image
overlaid on the
SEM image of the
same region shows
what the beaches
look like in space.



Magnification (3"x4" image): 75kX
Submitted by: Matthew McMahon

Instrument (Make and Model): Zeiss Ultra 60 SEM, Olympus IX71
Affiliation: NIST Center for Nanoscale Science and Technology



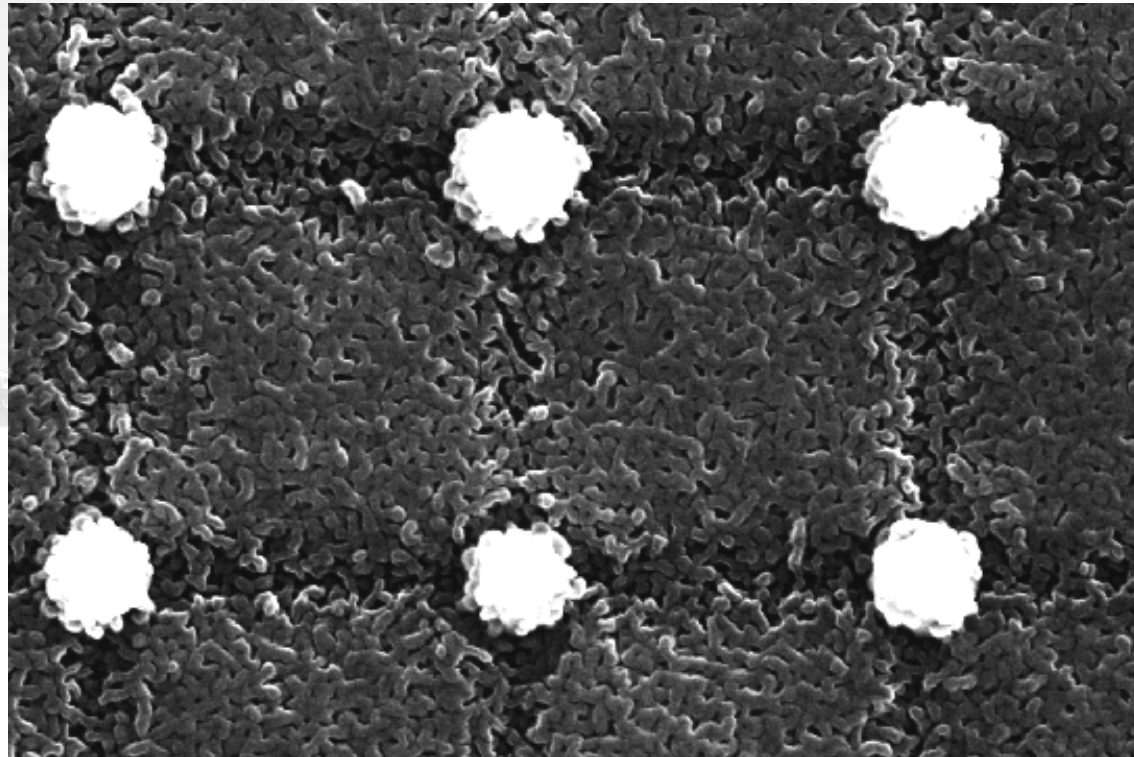
2009 EIPBN MicroGraph Contest

Micrograph Title:

tubifex tubifex

Description:

Fused silica surface with a thin Al mask after reactive ion beam etching (SEM image, top view).



Magnification (3"x4" image): 45 kx

Submitted by: J. Völlner, B. Ziberi

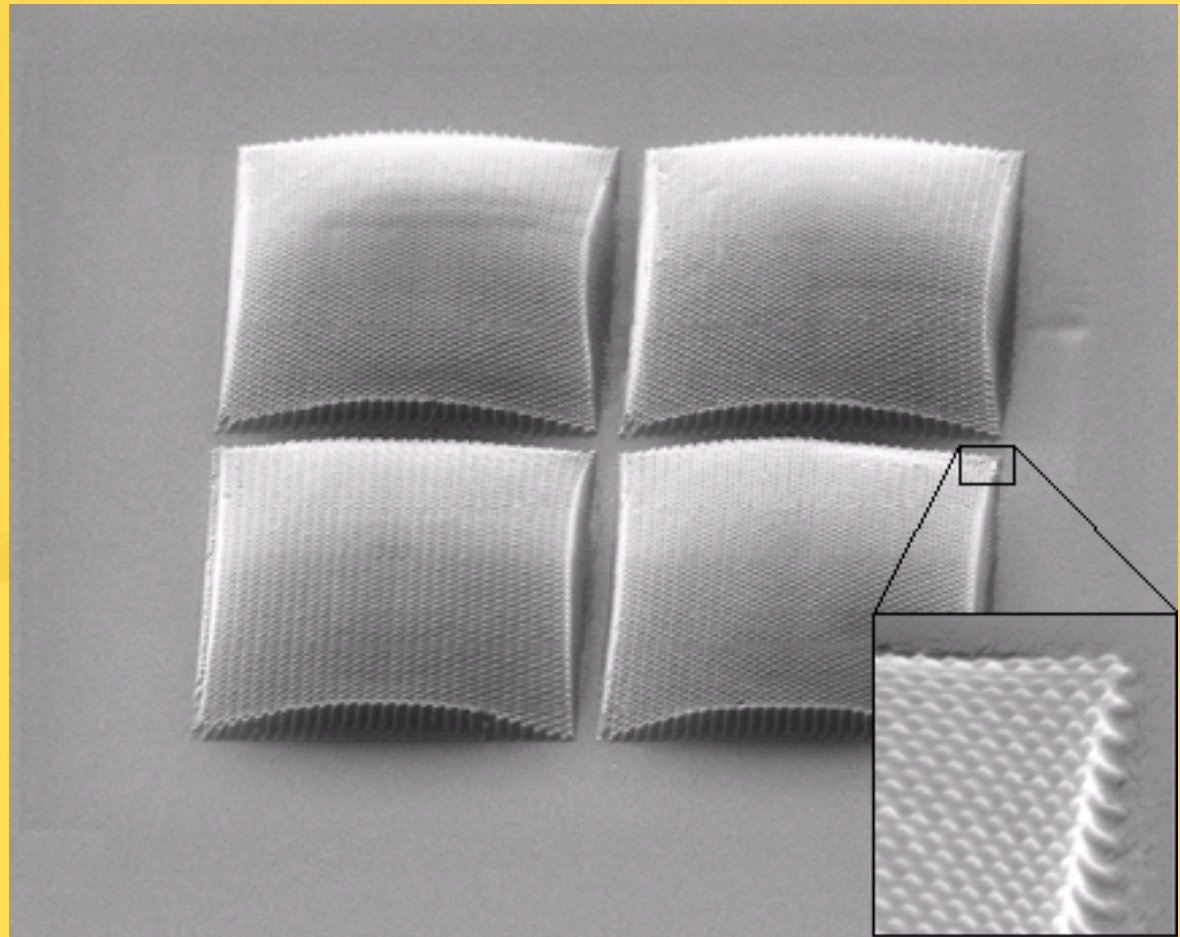
F. Frost, D. Hirsch, K. Zimmer

Instrument: Zeiss Ultra 55

Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



2009 EIPBN MicroGraph Contest



**Micrograph
Title:** "NIL
Imprinted
motheye
lens"

Description:
Fabricated
motheye lens
(4um in
diameter)
using FIB to
pattern a
template and
S-FIL to
replicate the
structure

Magnification (3"x4" image): 4k
Submitted by: Jeff Kettle

Instrument : Carl Zeiss XB 1540B/Imprio 55
Affiliation: University of Manchester



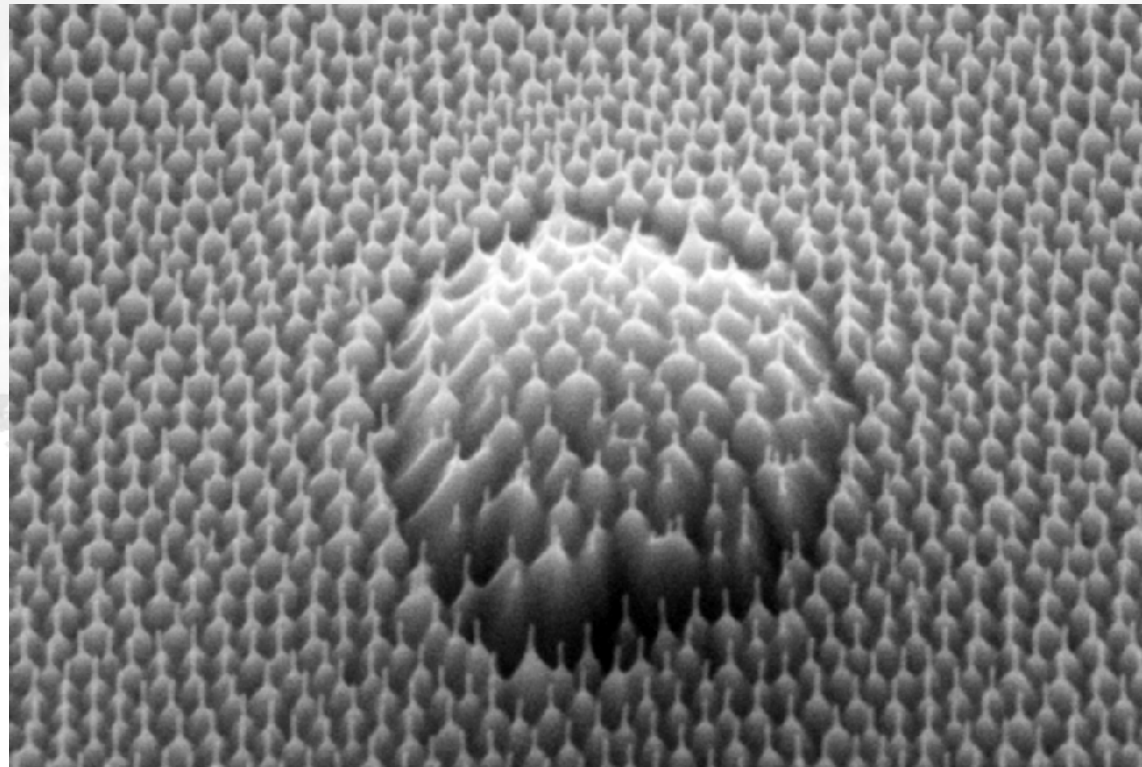
2009 EIPBN MicroGraph Contest

Micrograph Title:

ouch!

Description:

Self-organized nanostructures on a InAs surface induced by low-energy ion beam erosion, the hill originates from a local impurity



Magnification (3"x4" image): 27.8 kx

Submitted by: J. Völlner, B. Ziberi
F. Frost, D. Hirsch

Instrument: Zeiss Ultra 55

Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



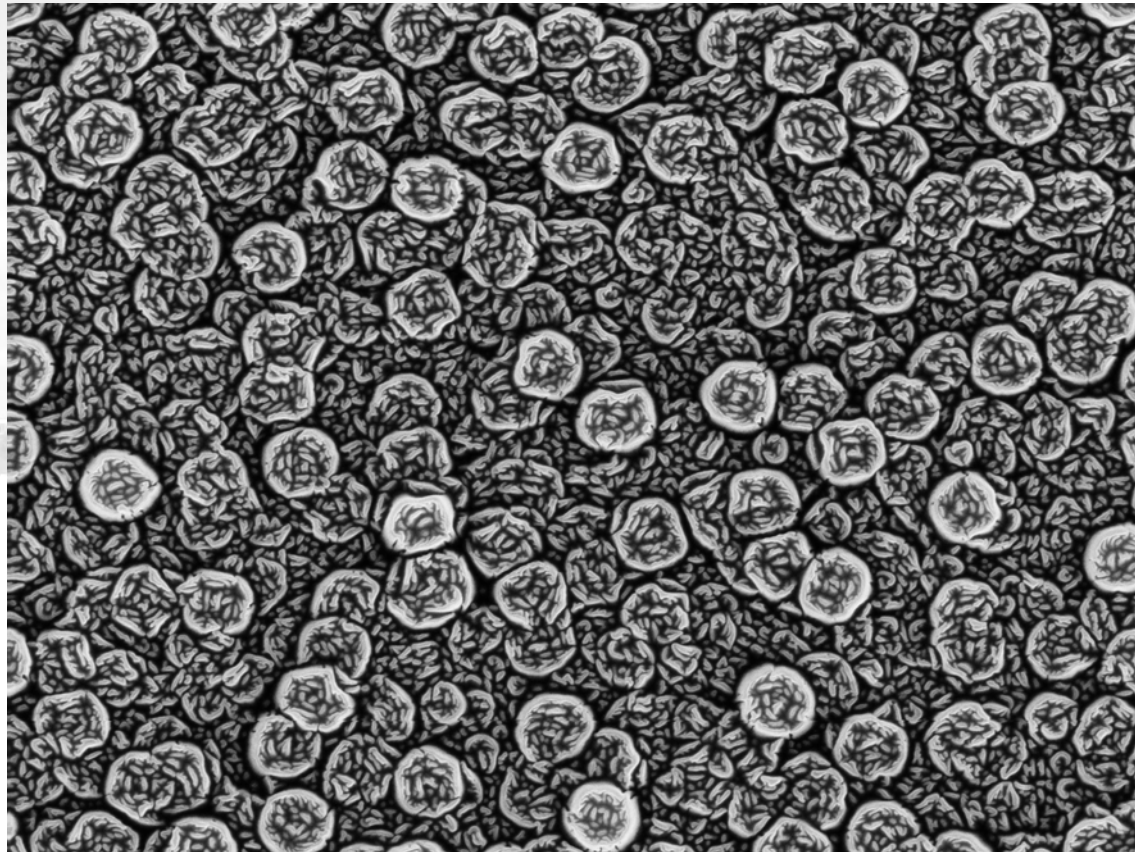
2009 EIPBN MicroGraph Contest

Micrograph Title:

bed of roses

Description:

Self-organized nanostructures (hollow cones) on a InAs surface induced by low-energy ion beam erosion (SEM image, top view)



Magnification (3"x4" image): 18.6 kx

Submitted by: J. Völlner, B. Ziberi
F. Frost, D. Hirsch

Instrument: Zeiss Ultra 55

Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



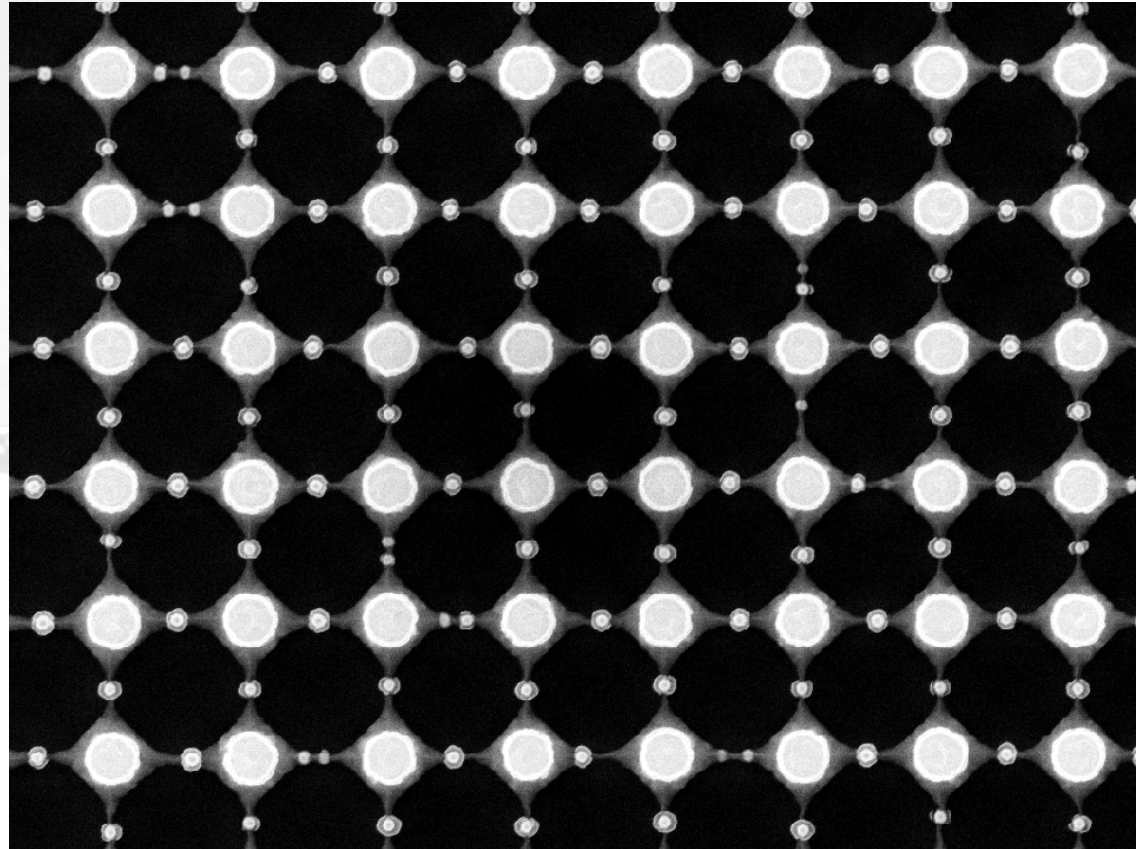
2009 EIPBN MicroGraph Contest

Micrograph Title:

hypnotized

Description:

Fused silica surface with a thin Al mask after reactive ion beam etching (SEM image, top view).



Magnification (3"x4" image): 45 kx

Submitted by: J. Völlner, B. Ziberi

F. Frost, D. Hirsch, K. Zimmer

Instrument: Zeiss Ultra 55

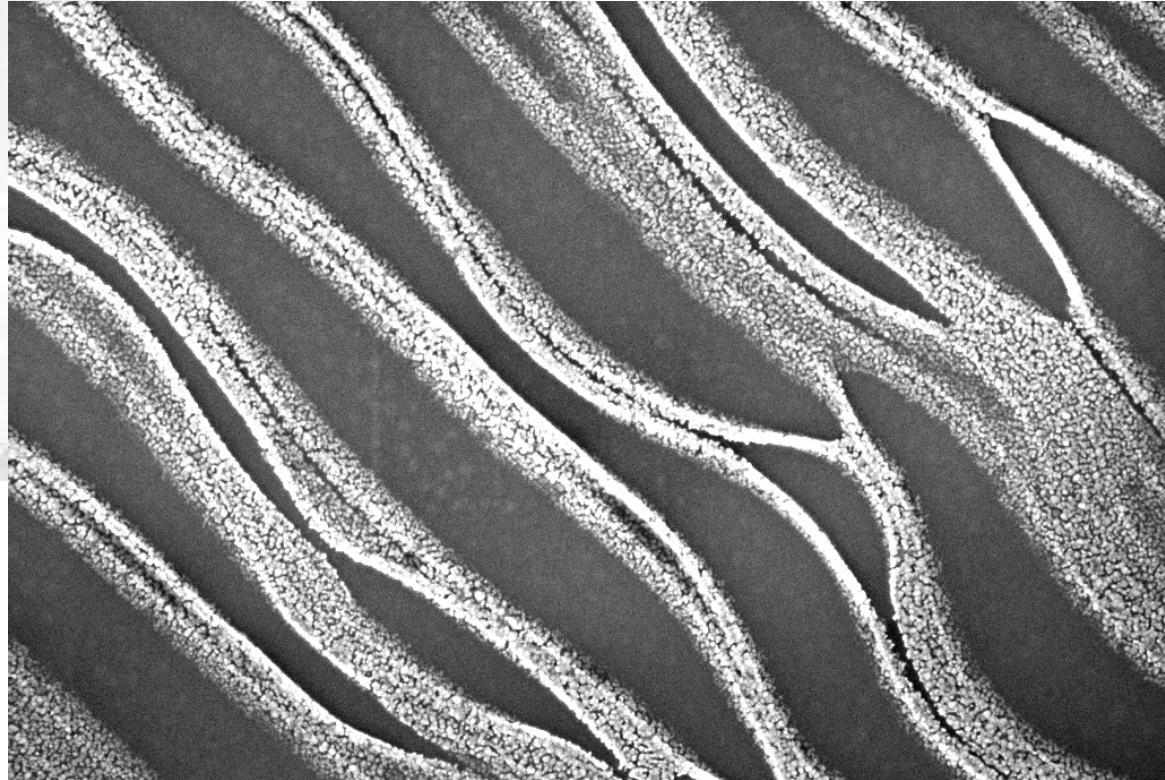
Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



2009 EIPBN MicroGraph Contest

Micrograph Title:
Flexibility

Description:
**ZnO nanowires made
with EUV-IL**



Magnification (3"x4" image): $\times 100k$
Submitted by: Vaida Auzelyte

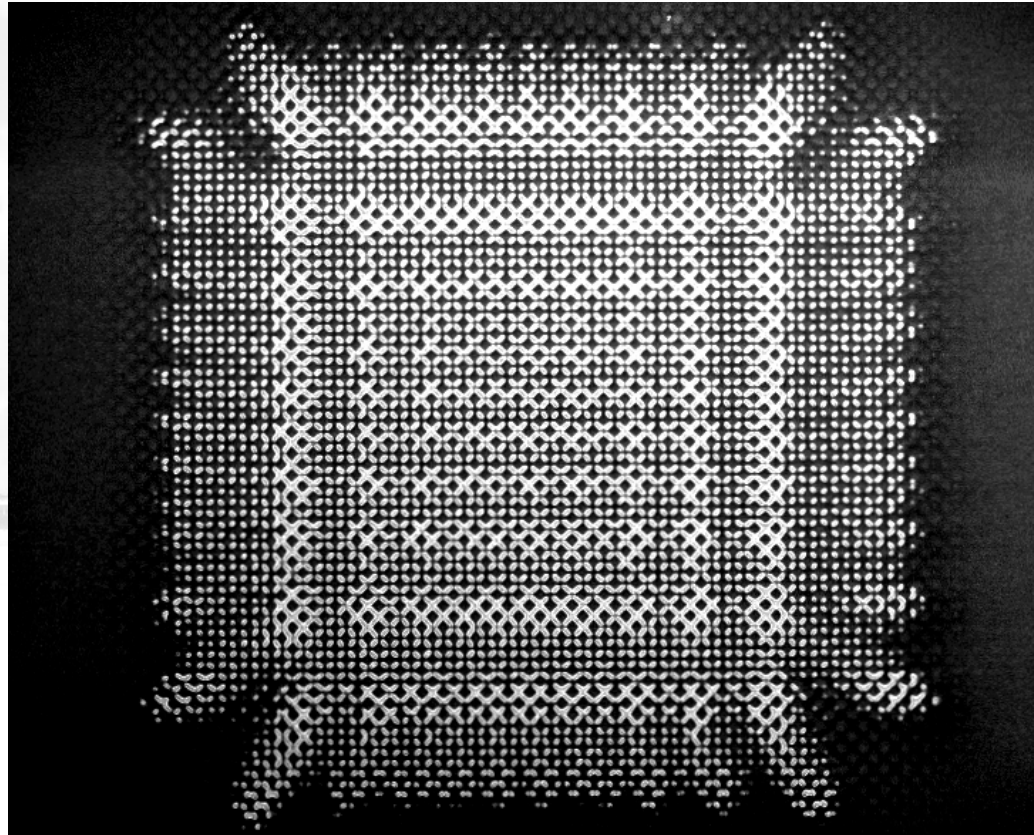
Instrument (Make and Model): Zeiss Supra 55VP
Affiliation: Paul Scherrer Institut, LMN group



2009 EIPBN MicroGraph Contest

Micrograph Title:
National Nanopattern

Description:
**EUV-IL pattern in Zinc
Naphthenate**

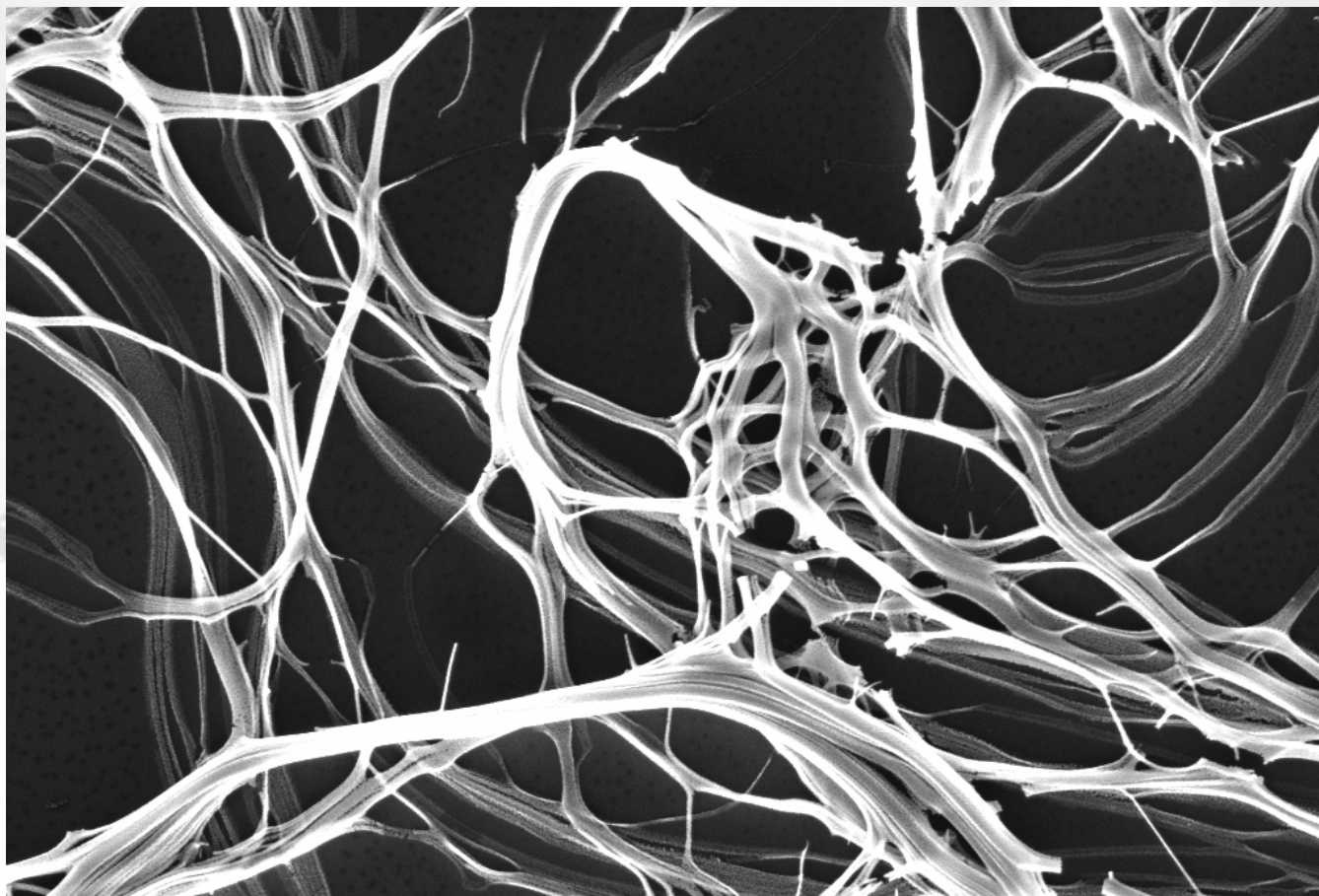


Magnification (3"x4" image): $\times 6$ k
Submitted by: Vaida Auzelyte

Instrument (Make and Model): Zeiss Supra 55VP
Affiliation: Paul Scherrer Institut. LMN group



2009 EIPBN MicroGraph Contest



Micrograph Title:
The roots of Zinc

Description:
Zinc Naphthenate fibers
made with EUV-IL,
detached from the
substrate

Magnification (3"x4" image): $\times 27\text{ k}$
Submitted by: Vaida Auzelyte

Instrument (Make and Model): Zeiss Supra 55VP
Affiliation: Paul Scherrer Institut. LMN group



2009 EIPBN MicroGraph Contest

**Micrograph
Title:
Ancient
cave
drawings.**

**Description:
300nm thick Al
on Si after lift-
off.**



Magnification (3"x4" image): 68.3K

Instrument (Make and Model): Raith e_line

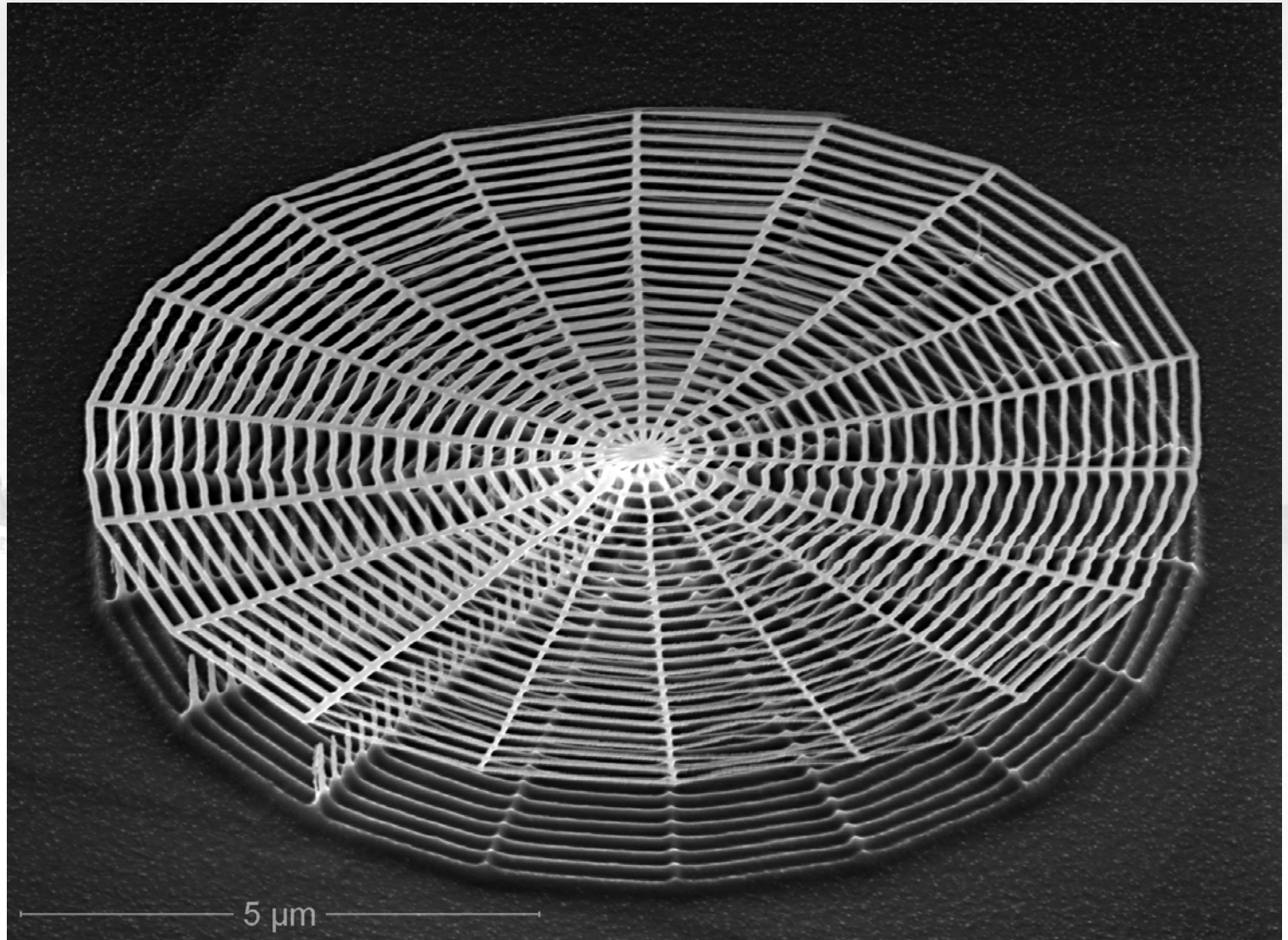
Submitted by: Yigal Lilach & Hadar Steinberg Affiliation: The Hebrew university of Jerusalem, Israel.



2009 EIPBN MicroGraph Contest

Micrograph Title:
“Where is the spider?”

Description:
Freestanding web of silicon nanowires supported only by its center. The size of the structure is roughly the same as the size of a human red blood cell.



Magnification (3"x4" image): 7KX
Submitted by: Nikolai Chekurov

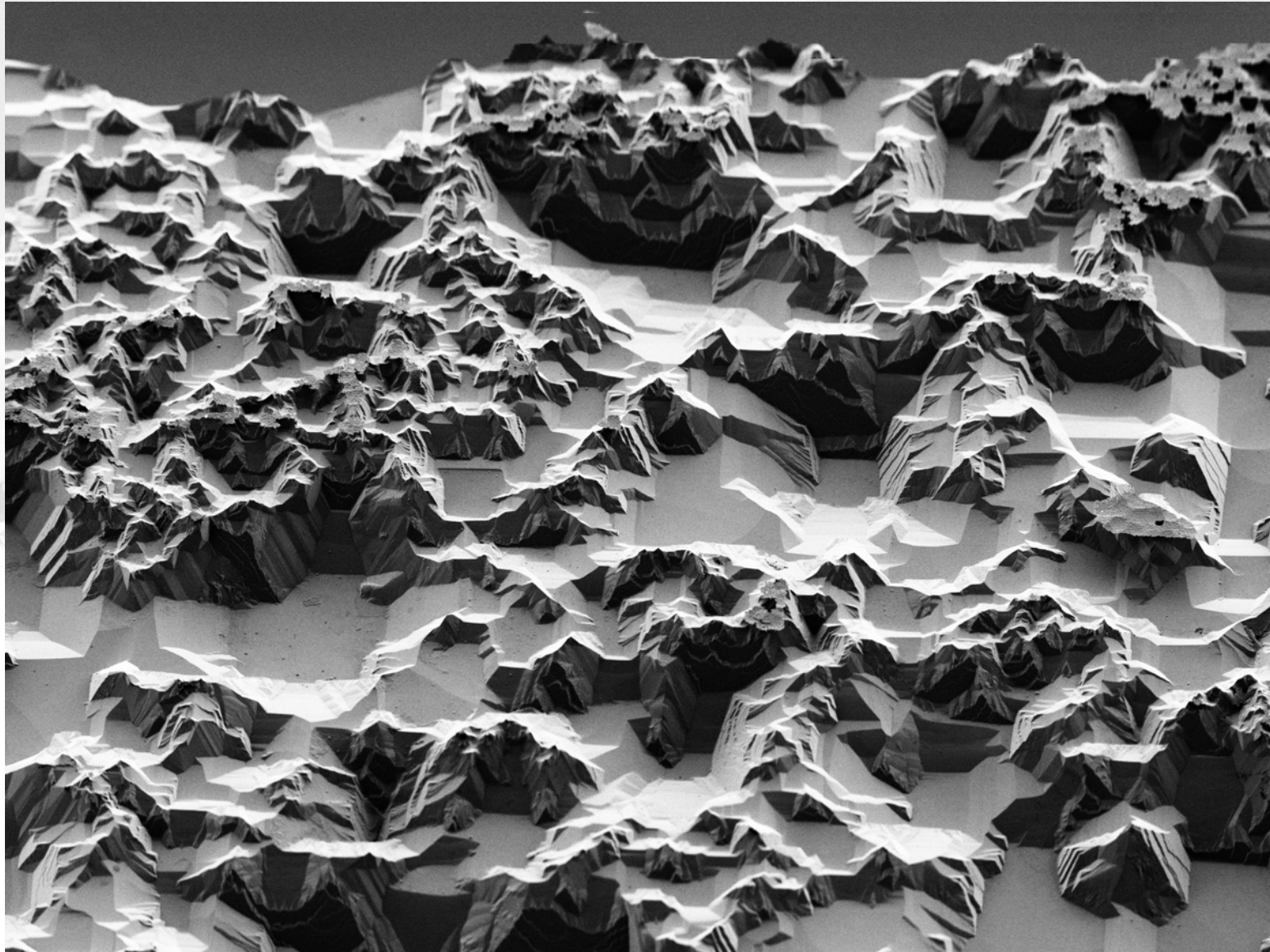
Instrument (Make and Model): FEI Helios Nanolab 600
Affiliation: Helsinki University of Technology



2009 EIPBN MicroGraph Contest

**Micrograph
Title: nAndes**

**Description:
A small-scale
mountain
range formed
by KOH
etching on the
ground side of
a Si wafer,
enhanced by
micromasking
from a remnant
oxide
hardmask**

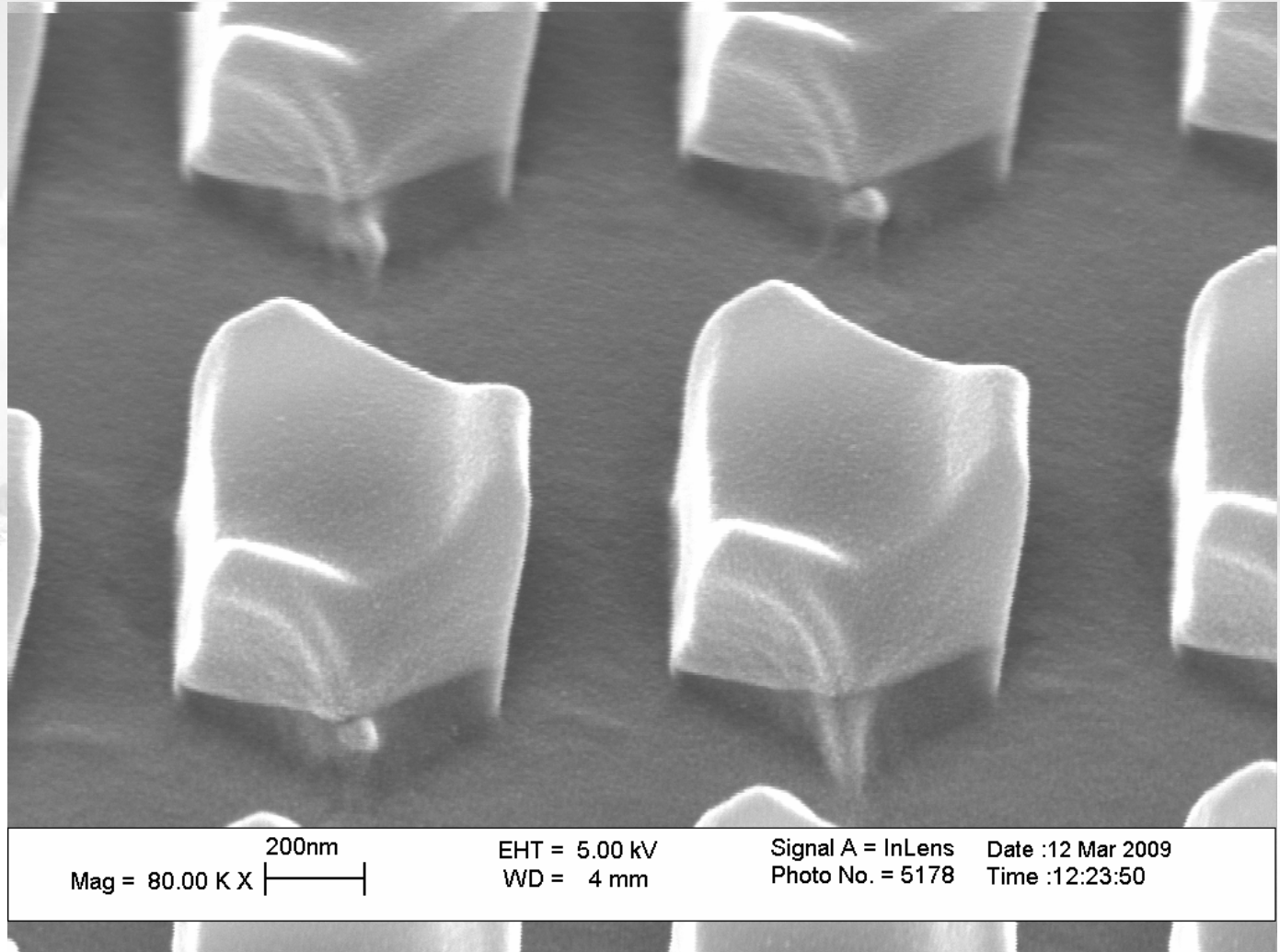


**Magnification (3"x4" image): 30x
Submitted by: Steven Hickman**

**Instrument (Make and Model): Zeiss Ultra 55
Affiliation: Cornell University**



2009 EIPBN MicroGraph Contest



**Micrograph
Title:**
NanoDesign
Chairs

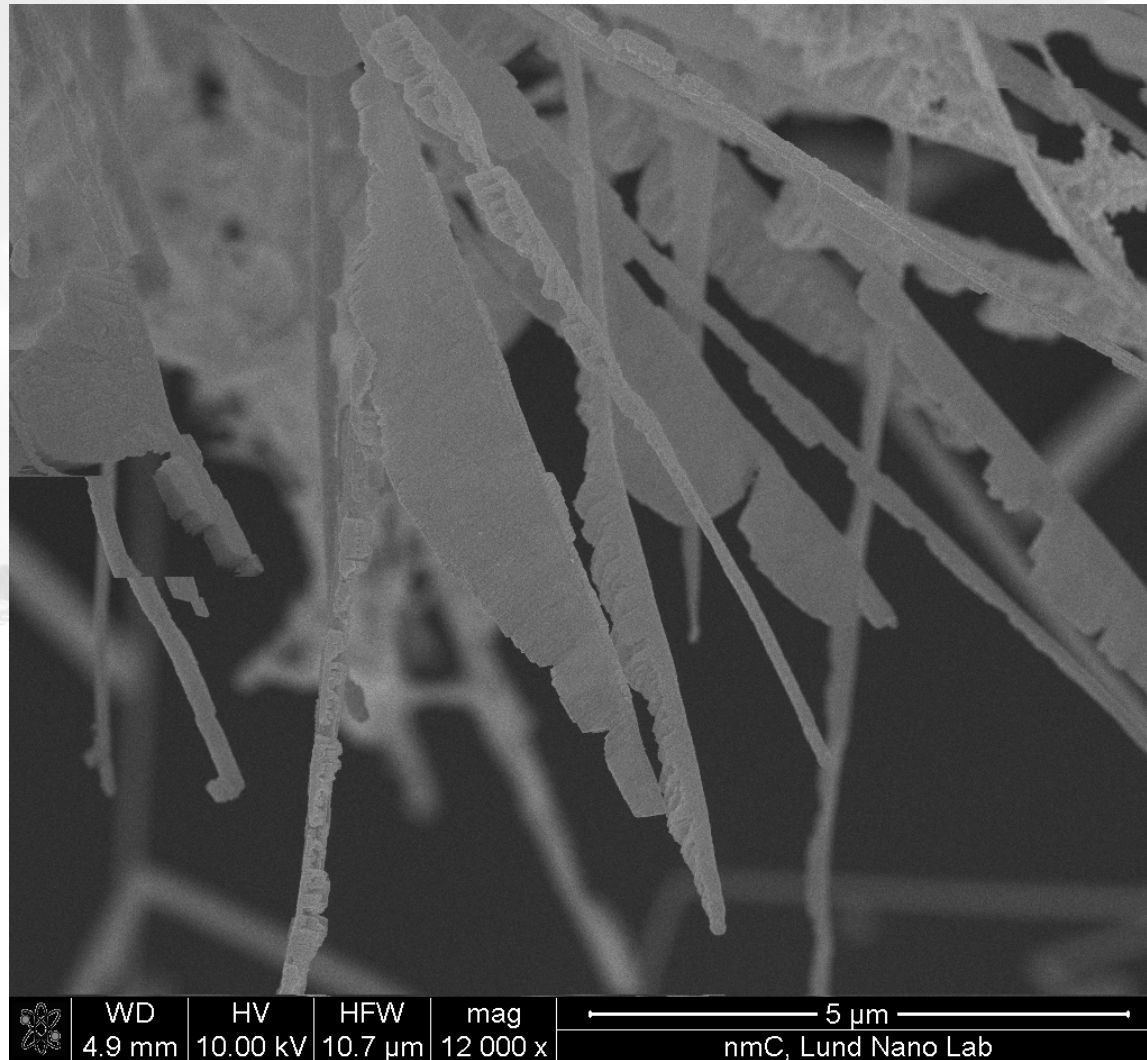
Description:
Obtained to cyclo-
olefin polymer by
hot embossing with
a Silicon mold
having hexagonal
pattern.

Magnification (3"x4" image): 80KX
Submitted by: Birgit Päiväranta

Instrument (Make and Model): LEO 1550 Gemini
Affiliation: University of Joensuu, Finland



2009 EIPBN MicroGraph Contest



Micrograph Title:
**Nanowires in
the winter**

Description:
Gallium phosphide
nanowires as a neuron-
culture substrate. The
sample was critical-
point dried and
sputtered with gold

Magnification (3"x4" image): 12kX

Submitted by: Christelle Prinz

Instrument (Make and Model): FEI Nova NanoLab 600

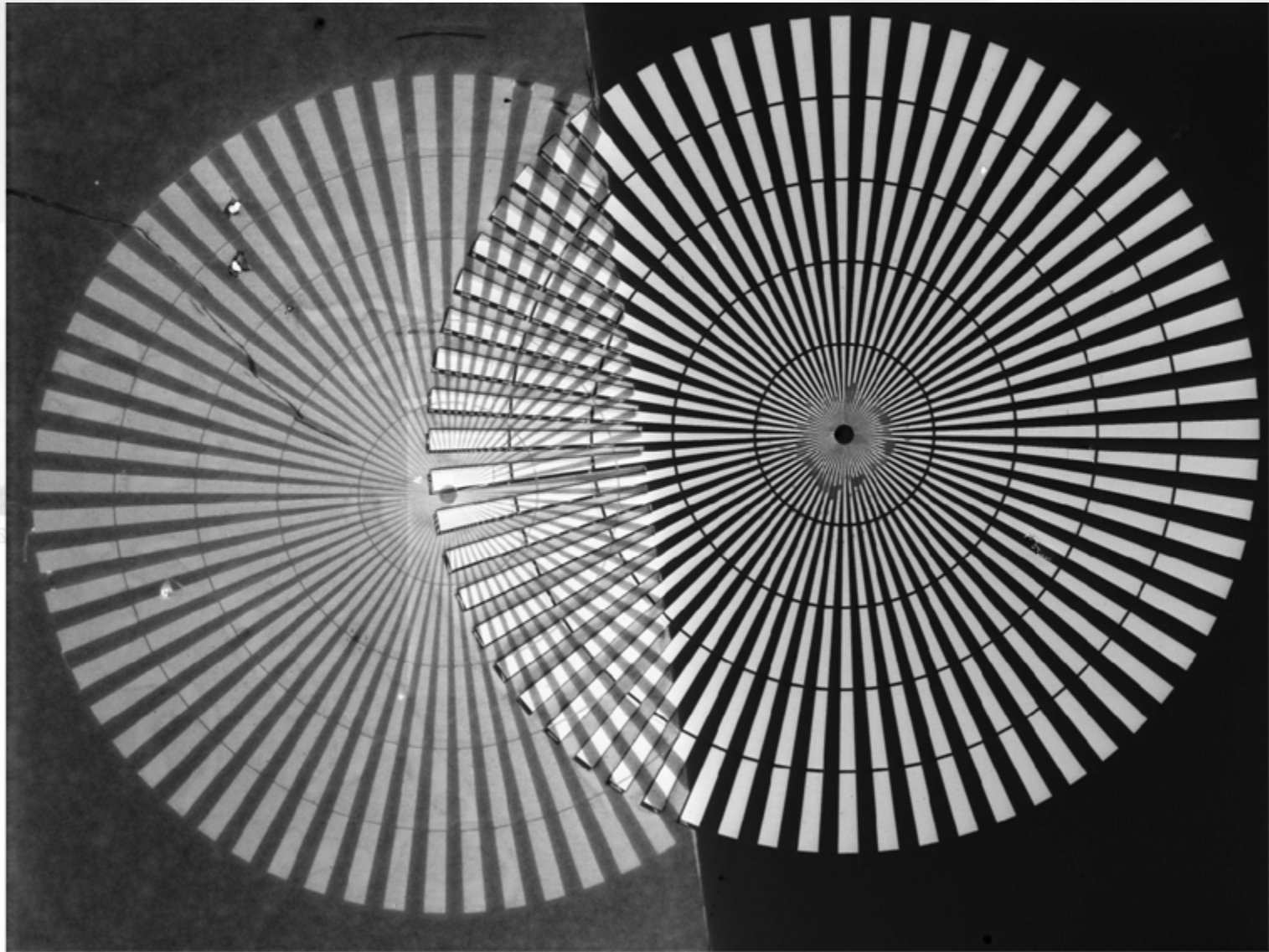
Affiliation: Lund Univ.



2009 EIPBN MicroGraph Contest

**Micrograph
Title:**
Do Not Drink
and Lift-off

Description:
100nm-thick PMMA
lift-off failed after
evaporation of 30
nm-thick MgF_2 . The
PMMA layer bended a
long the line in the
center of the image
producing a doubled
Siemens Star pattern.

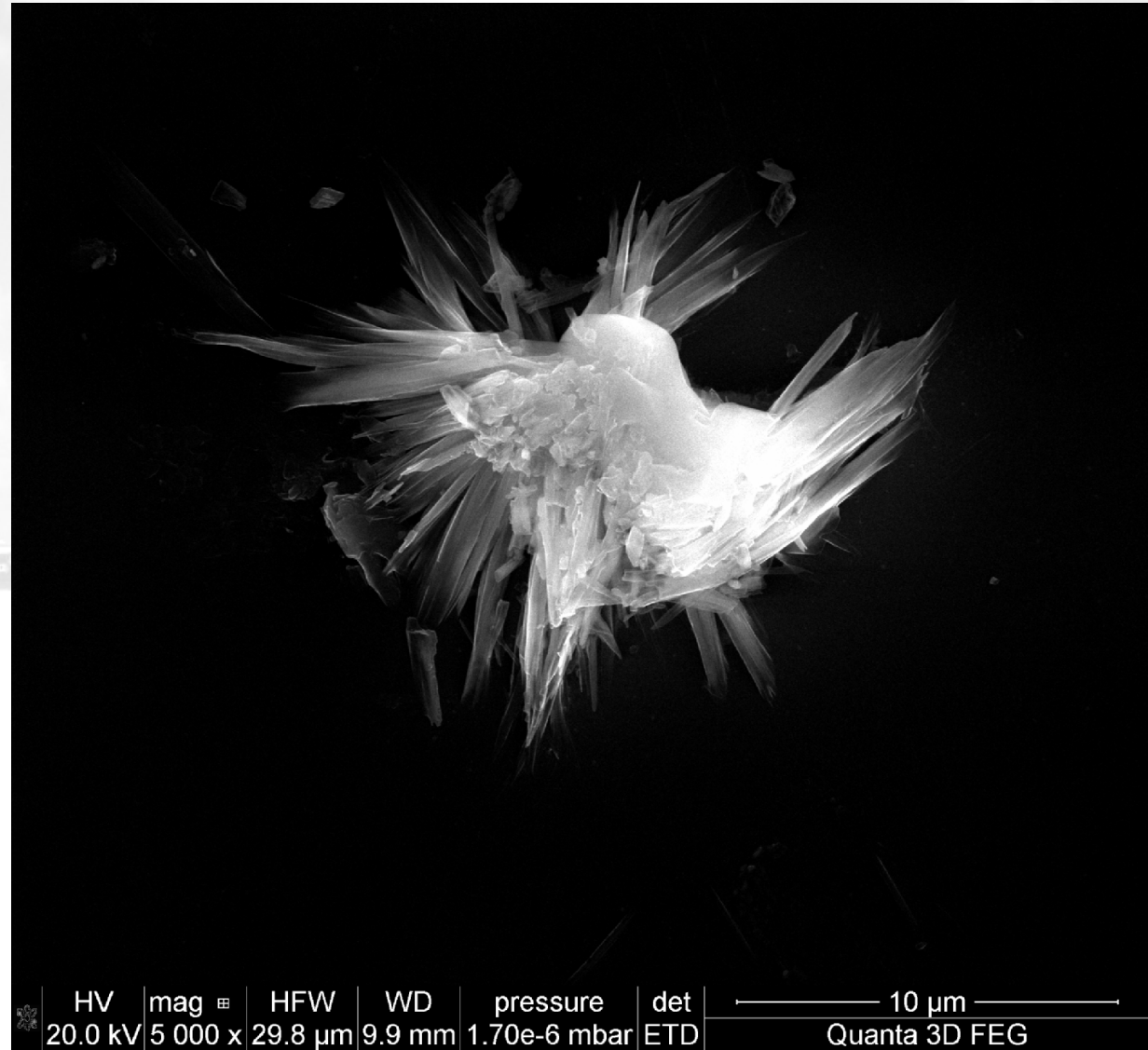


Magnification (3"x4" image): 2.5 Kx
Submitted by: Joan Vila-Comamala

Instrument (Make and Model): ZEISS Supra FESEM 55VP
Affiliation: Paul Scherrer Institut (Switzerland)



2009 EIPBN MicroGraph Contest



Micrograph

Title:

“Feathery hat
for the horse
races”

Description:

I'm still looking
for the micro
horses...

(Particle on
aluminum on
glass)

Magnification (3"x4" image): 5,000x

Submitted by: V.G. Kutshoukov and P. Kruit

Instrument (Make and Model): FEI Quanta 3D FEG

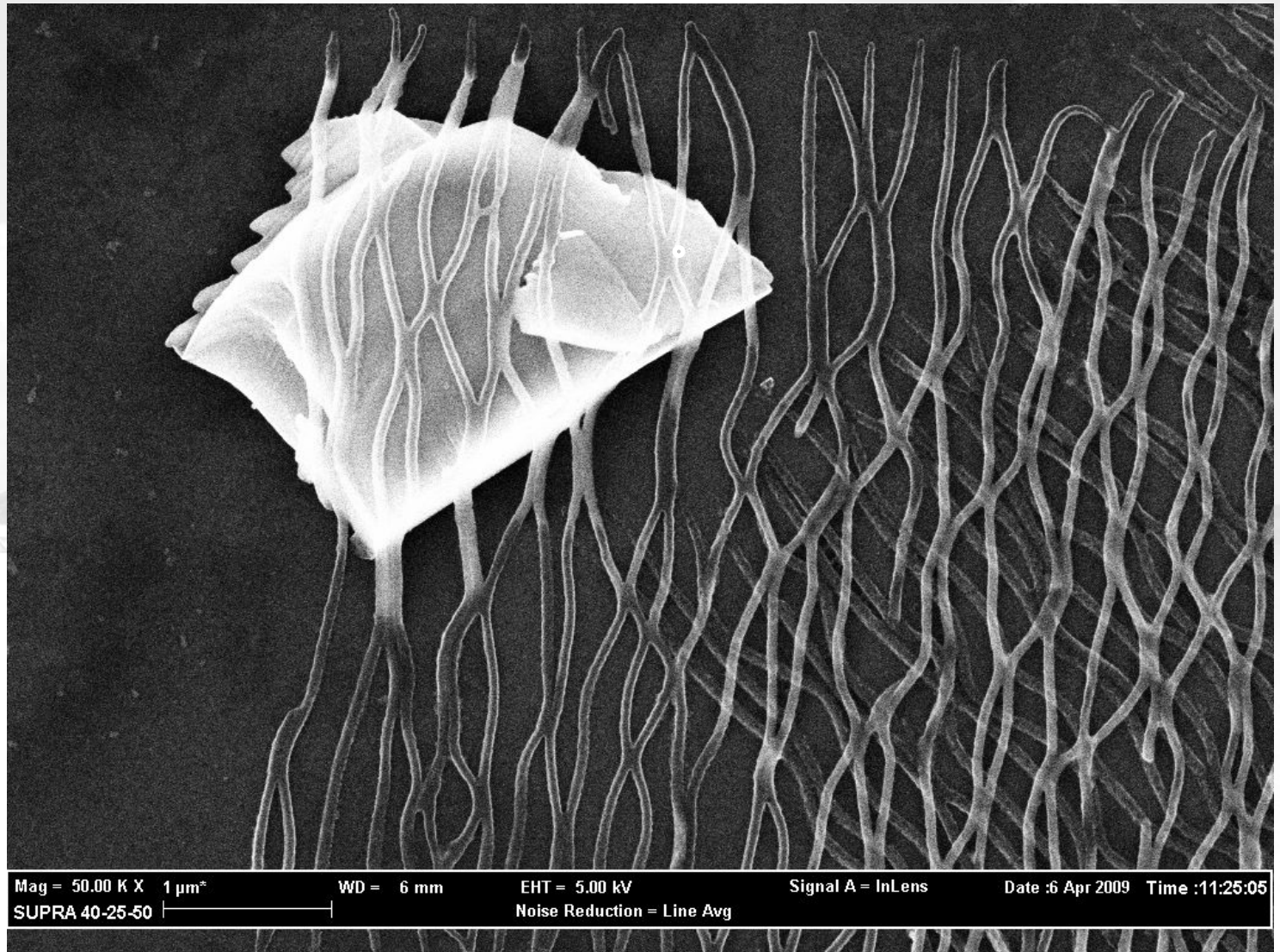
Affiliation: Delft University of Technology,
The Netherlands



2009 EIPBN MicroGraph Contest

Micrograph Title:
Sheepshead fish
in the waters of
Marco Island

Description:
Thin polymeric
"Sheepshead
fish" swimming
among the
polymeric nano
"seaweed"



Magnification (3"x4" image): 50k
Submitted by: Li Tao

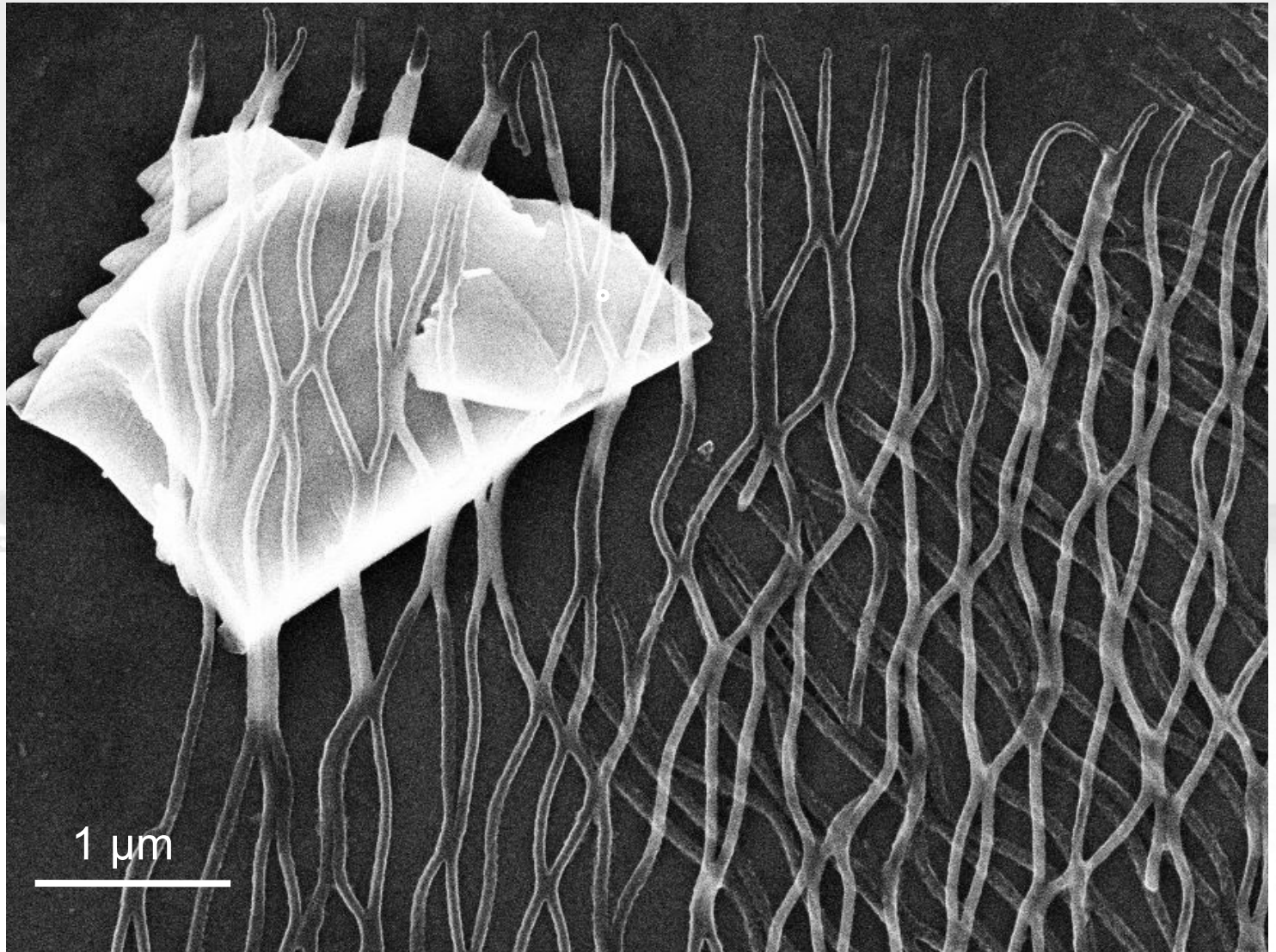
Instrument (Make and Model): Zeiss SUPRA 40SEM
Affiliation: University of Texas at Dallas



2009 EIPBN MicroGraph Contest

Micrograph Title:
Sheepshead fish
in the waters of
Marco Island

Description:
Thin polymeric
"Sheepshead
fish" swimming
among the
polymeric nano
"seaweed"

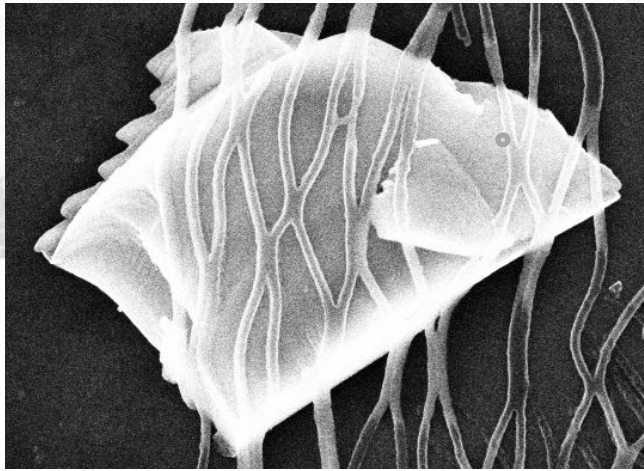


Magnification (3"x4" image): 60k
Submitted by: Li Tao

Instrument (Make and Model): Zeiss SUPRA 40SEM
Affiliation: University of Texas at Dallas



2009 EIPBN MicroGraph Contest



“ Polymeric fish”



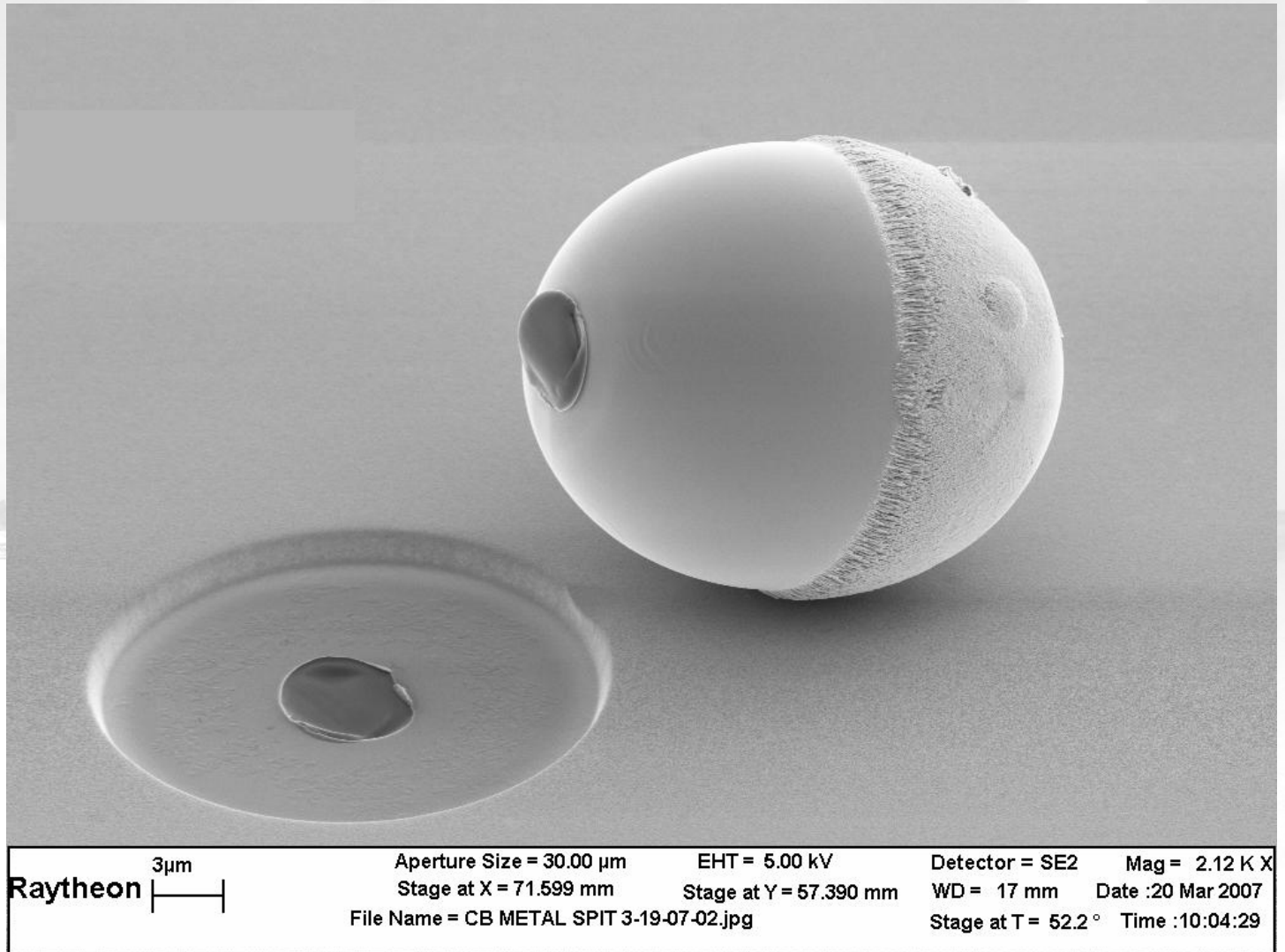
Sheepshead fish
from Marco Island, FL



2009 EIPBN MicroGraph Contest

**Micrograph
Title: Olive**

**Description:
Evaporated
metal "spit"**

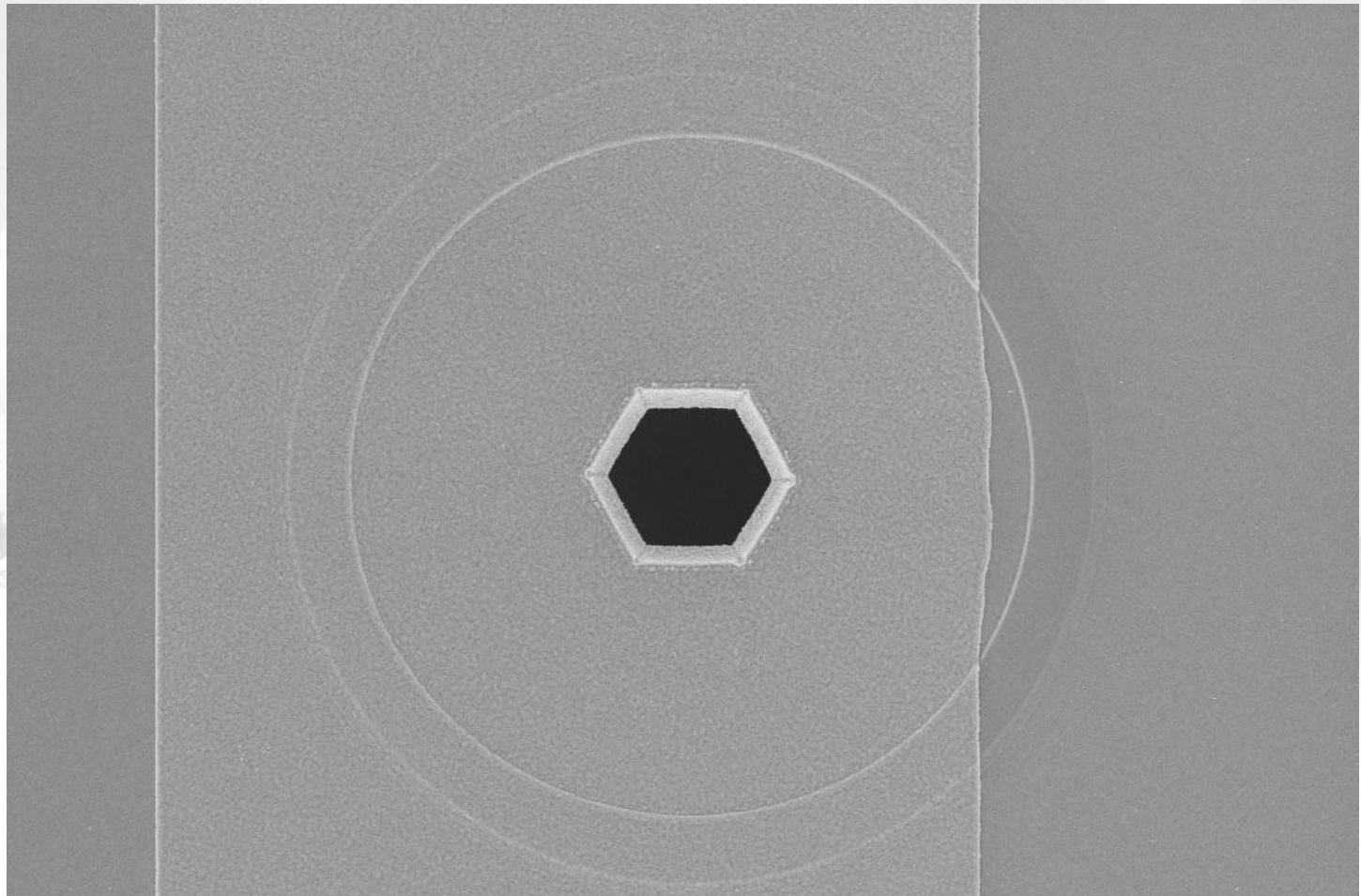


**Magnification (3"x4" image): 2.12 KX
Submitted by: J. Pagliuca**

**Instrument (Make and Model): Leo Genesis 1560
Affiliation: Raytheon RF Components**



2009 EIPBN MicroGraph Contest



Raytheon	10µm	Stage at X = 78.307 mm	Aperture Size = 30.00 µm	Detector = InLens	Mag = 1.58 K X
		Stage at Y = 88.850 mm	EHT = 5.00 kV	WD = 3 mm	Date :11 Jun 2008
		File Name = C080292-6-23.jpg	Stage at T = -0.1 °	Time :9:33:02	

Magnification (3"x4" image): 1.58KX
Submitted by: J. Pagliuca

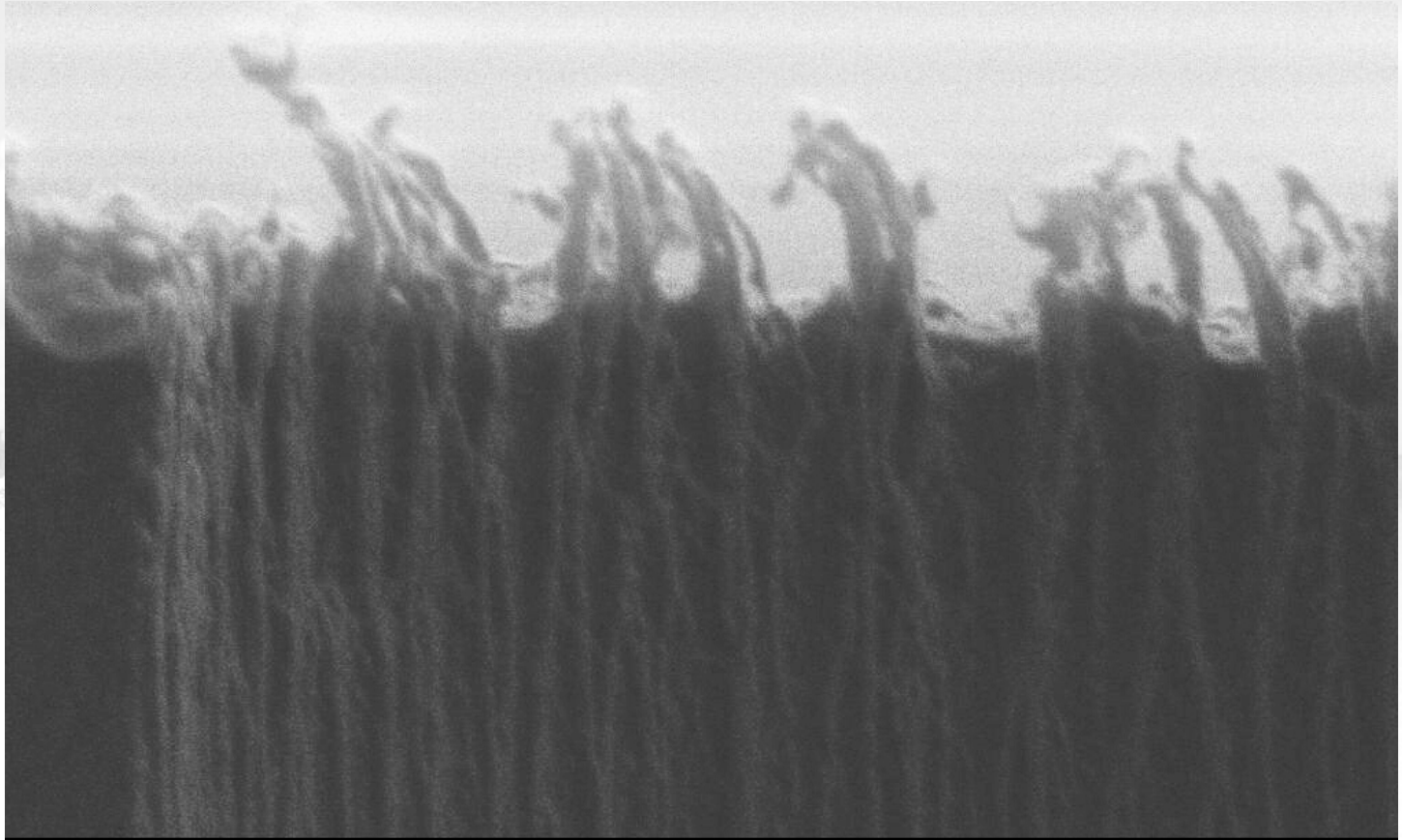
Instrument (Make and Model): Leo Genesis 1560
Affiliation: Raytheon RF Components

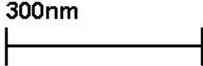


2009 EIPBN MicroGraph Contest

**Micrograph
Title:
Roots-Music
Concert Fans**

**Description:
BCB Stringers**



Raytheon 

Stage at X = 60.990 mm Aperture Size = 7.500 μ m Detector = SE2 Mag = 51.42 K X
Stage at Y = 80.651 mm EHT = 0.70 kV WD = 4 mm Date :23 Feb 2009
File Name = 5UM VIA BCB_SiN-24.jpg Stage at T = 20.0 $^{\circ}$ Time :13:20:25

Magnification (3"x4" image): 51.42KX
Submitted by: J. Pagliuca

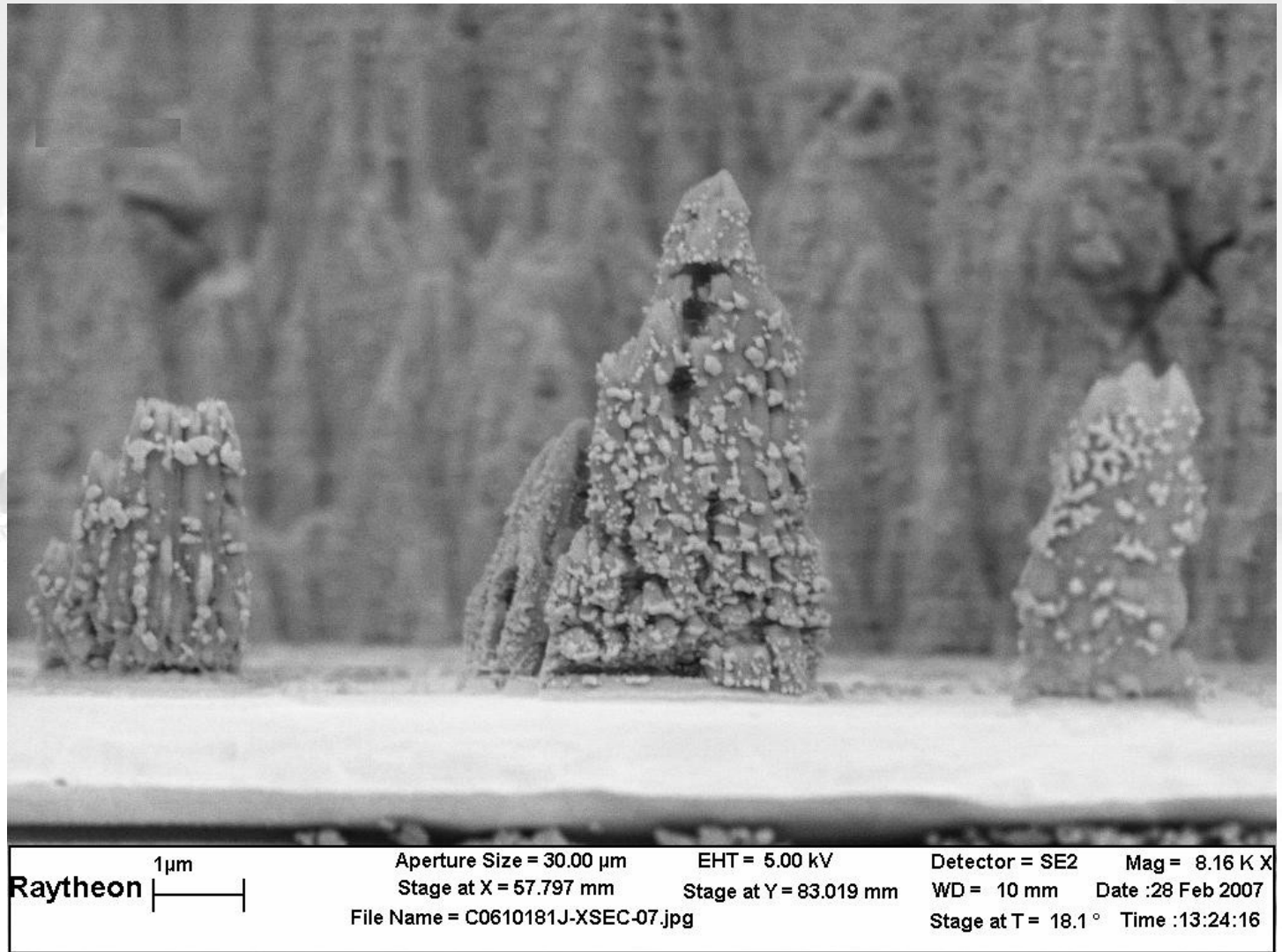
Instrument (Make and Model): Leo Genesis 1560
Affiliation: Raytheon RF Components



2009 EIPBN MicroGraph Contest

**Micrograph
Title:
Snowy
Christmas
Trees**

**Description:
Features from
deprocessed
wafer**



**Magnification (3"x4" image): 8.16KX
Submitted by: J. Pagliuca**

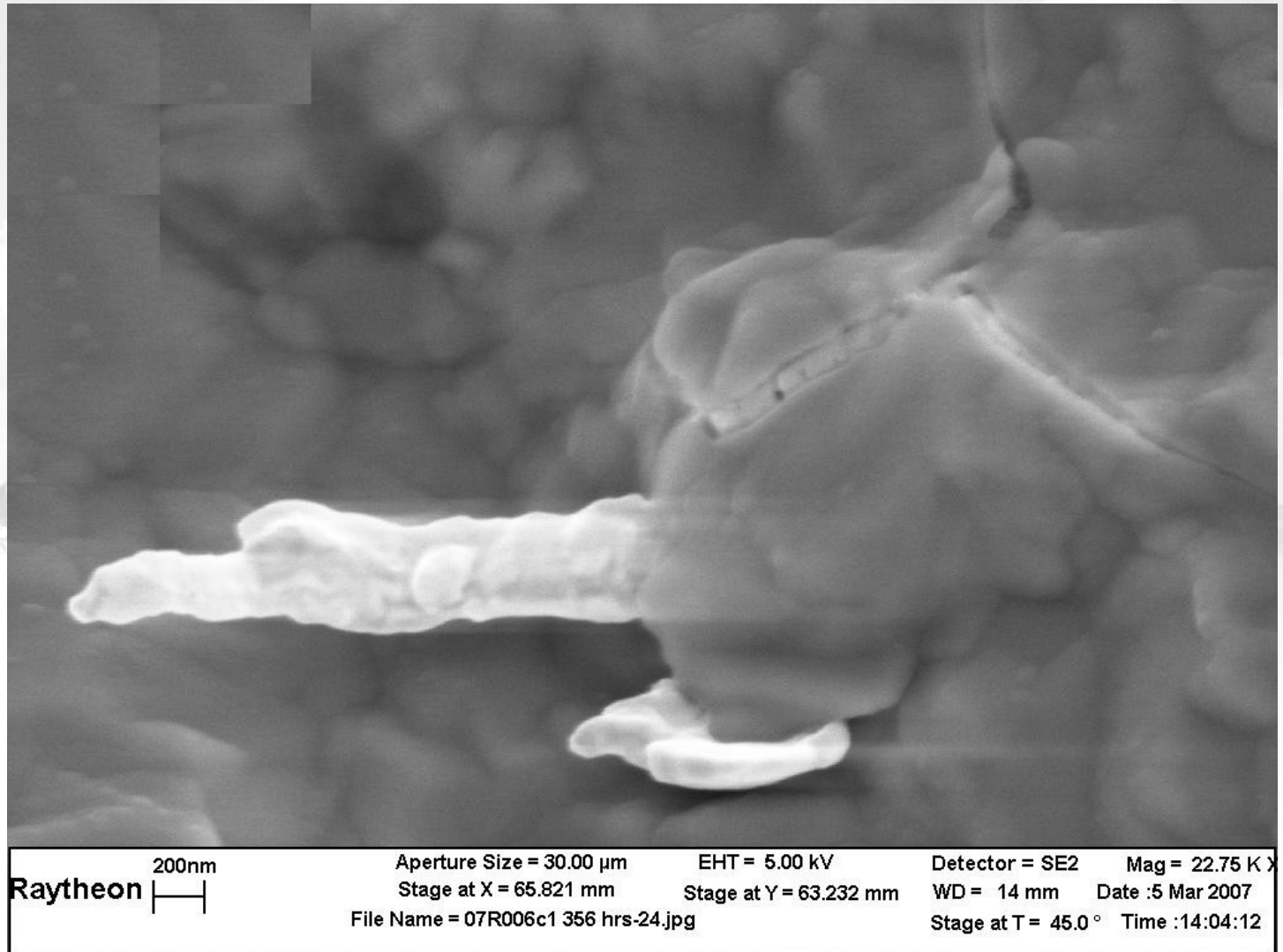
**Instrument (Make and Model): Leo Genesis 1560
Affiliation: Raytheon RF Components**



2009 EIPBN MicroGraph Contest

**Micrograph
Title:
Metal
Monster**

**Description:
Restructured
metal**



**Magnification (3"x4" image): 22.75KX
Submitted by: J. Pagliuca**

**Instrument (Make and Model): Leo Genesis 1560
Affiliation: Raytheon RF Components**



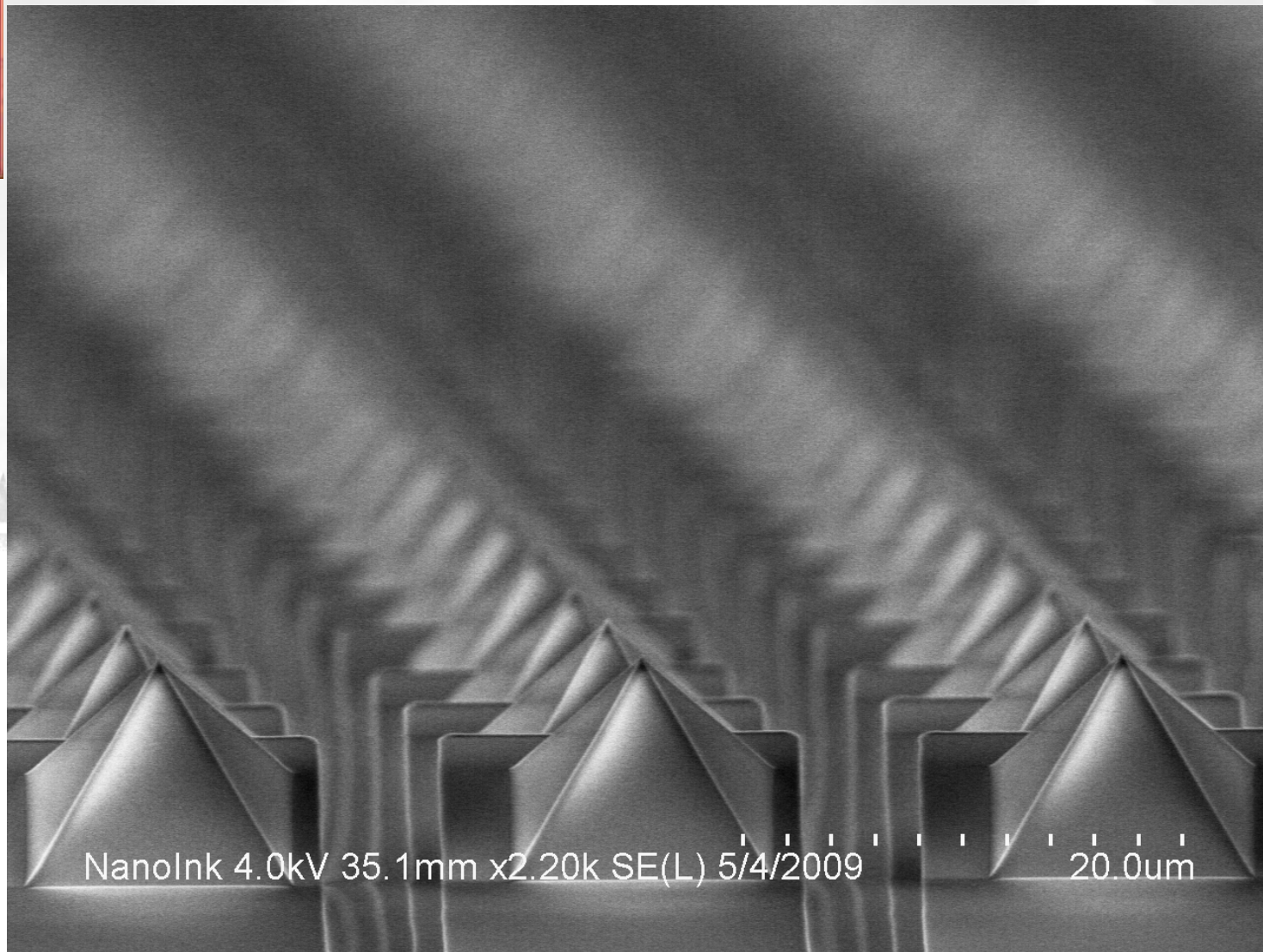
2009 EIPBN MicroGraph Contest

Micrograph Title:

Zero Hour at Giza

Description:

*Dip Pen
Nanolithography
2-D Array*



Magnification (3"x4" image): 2.2kX
Submitted by: George W Woodruff III

Instrument (Make and Model): Hitachi S-4800 FESEM
Affiliation: NanoInk, Inc.



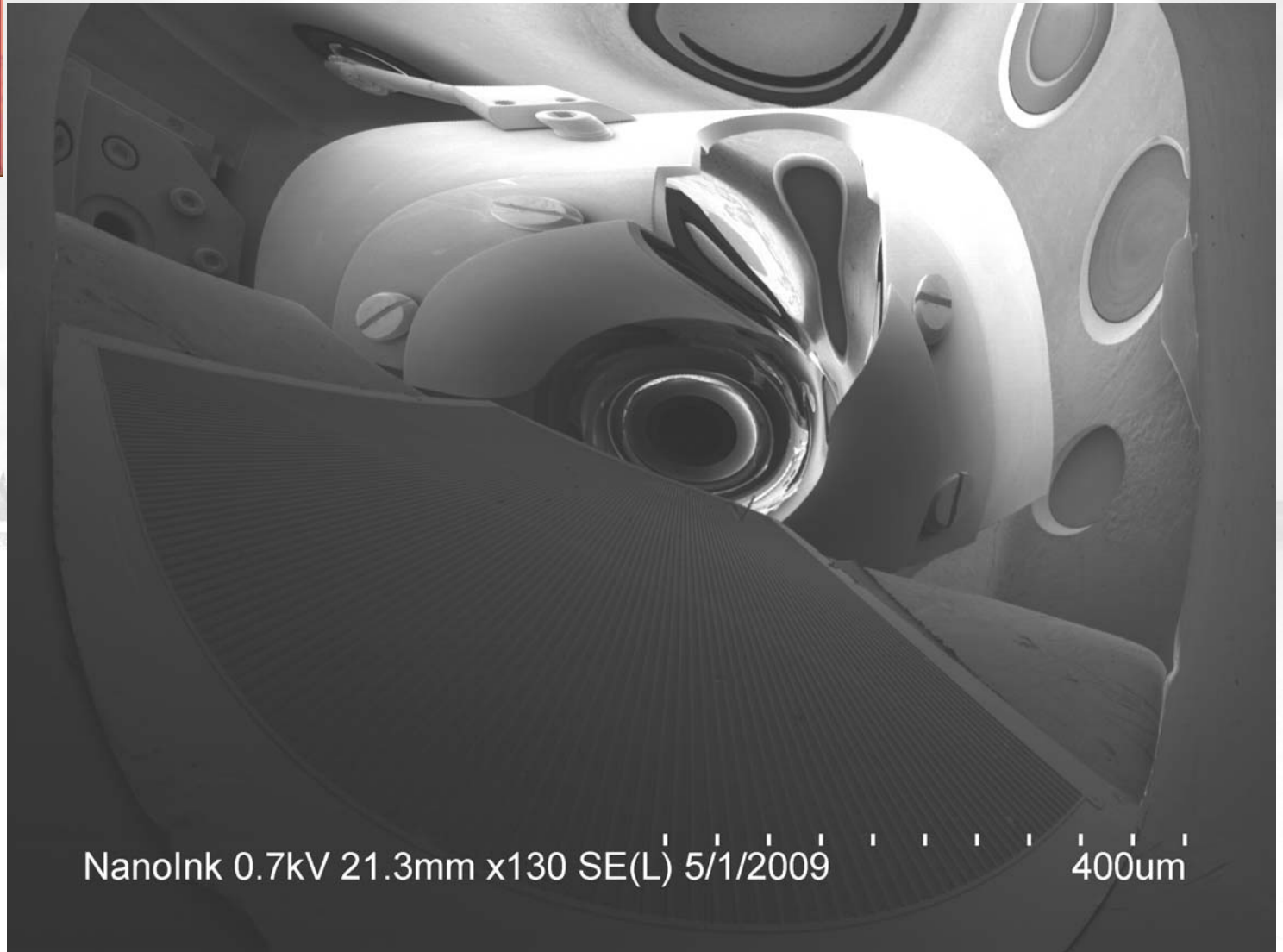
2009 EIPBN MicroGraph Contest

Micrograph Title:

*Virtual Sunset at
the Beginning of
Agriculture*

Description:

*Dip Pen
Nanolithography
2-D Array viewed
through a Mirror-
SEM imaged
polymer*



Magnification (3"x4" image): 130X
Submitted by: George W Woodruff III

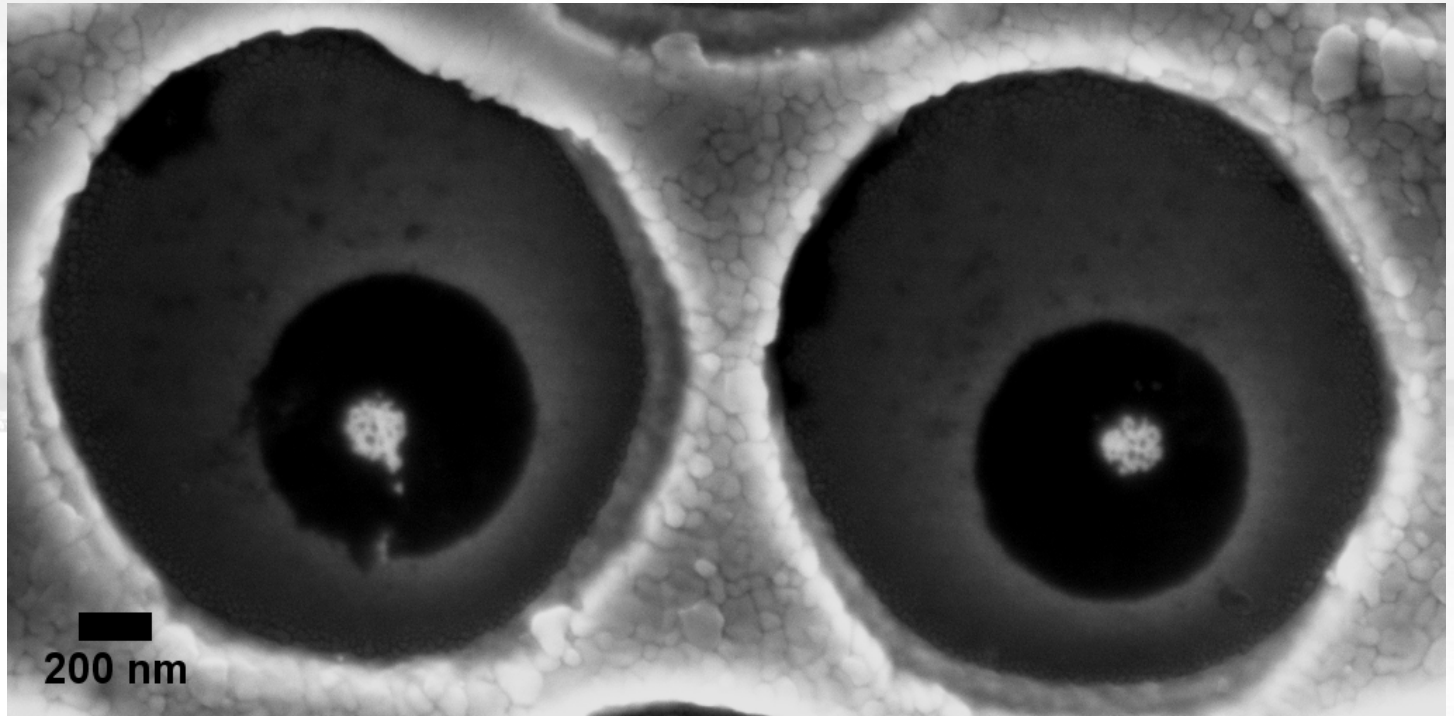
Instrument (Make and Model): Hitachi S-4800 FESEM
Affiliation: NanoInk, Inc.



2009 EIPBN MicroGraph Contest

Micrograph Title:
"It's Staring At Me."

Description:
Removing polystyrene
spheres used as
lithographic masks
leaves eyes
desperately in need of
some optometry work.

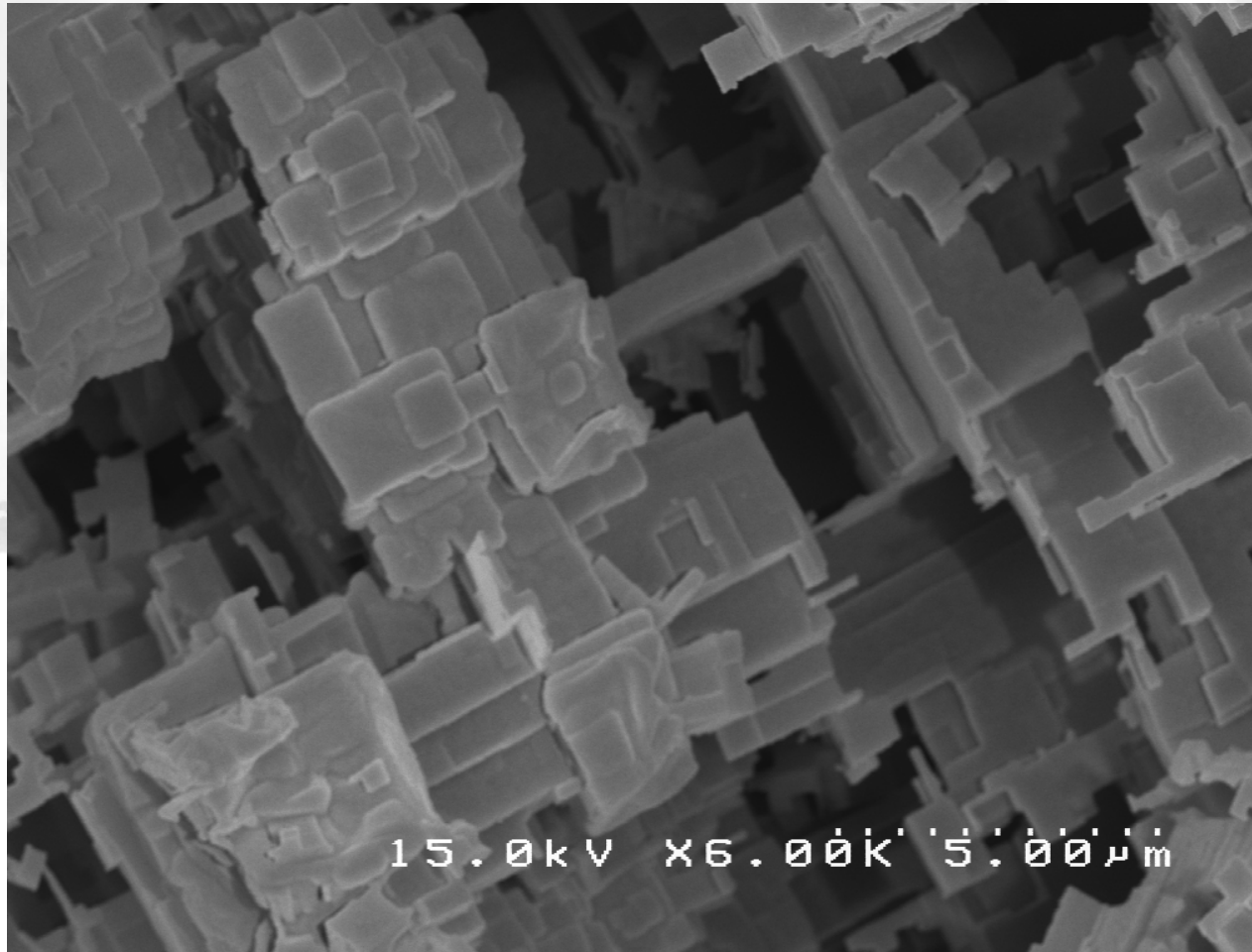


Magnification (3"x4" image): 95 KX
Submitted by: Evan Brown

Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest



Micrograph Title: "I Heart Nano New York."

Description:
Electrochemical corrosion of aluminum metal in oxalic acid under bias unearths a bustling nano city.

Magnification (3"x4" image): 6 KX
Submitted by: Evan Brown

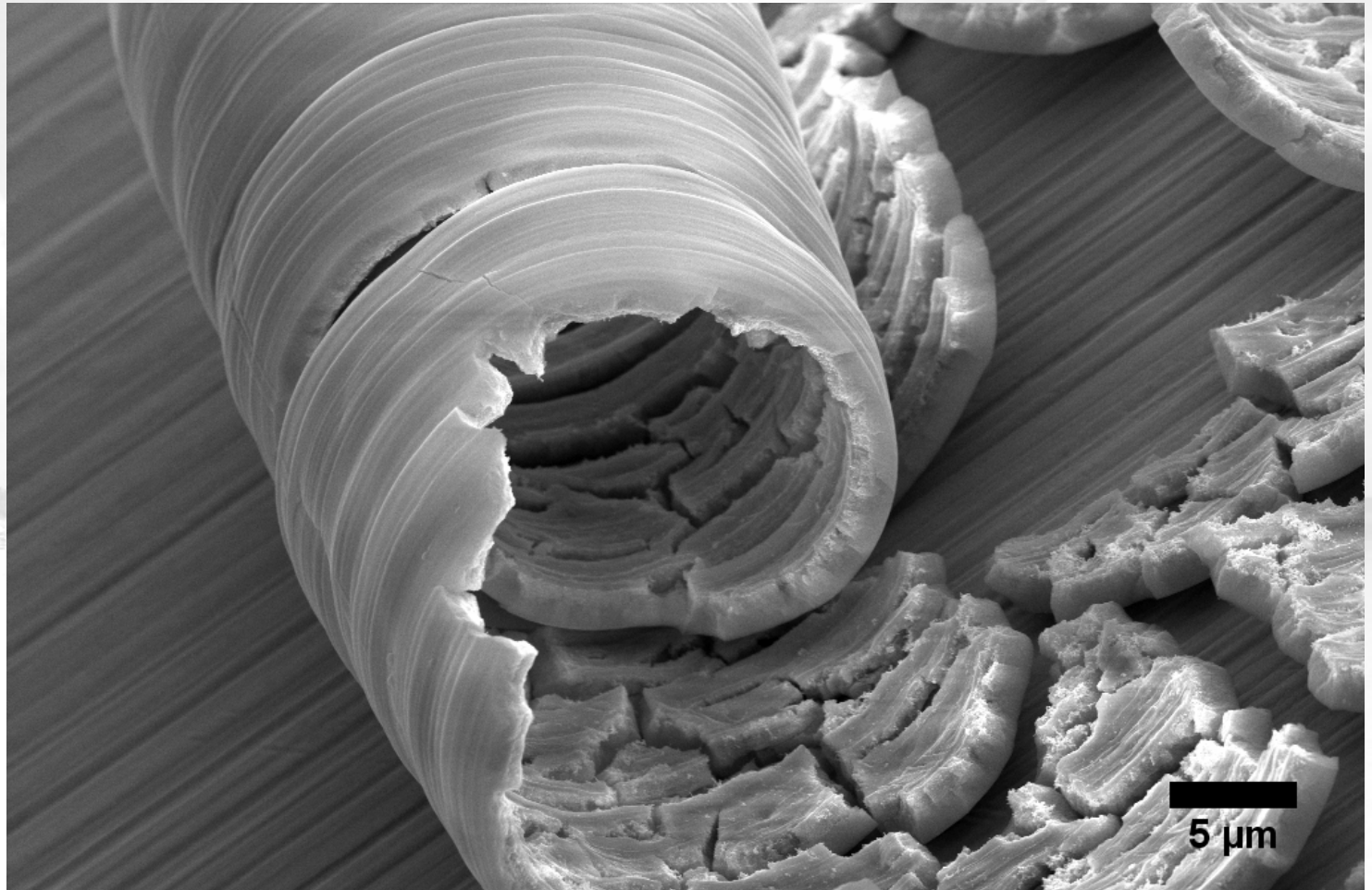
Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Surf's Up."

Description:
Electrochemical
oxidation of gold in
oxalic acid tubes up for
some gnarly waves.



Magnification (3"x4" image): 7 KX
Submitted by: Evan Brown

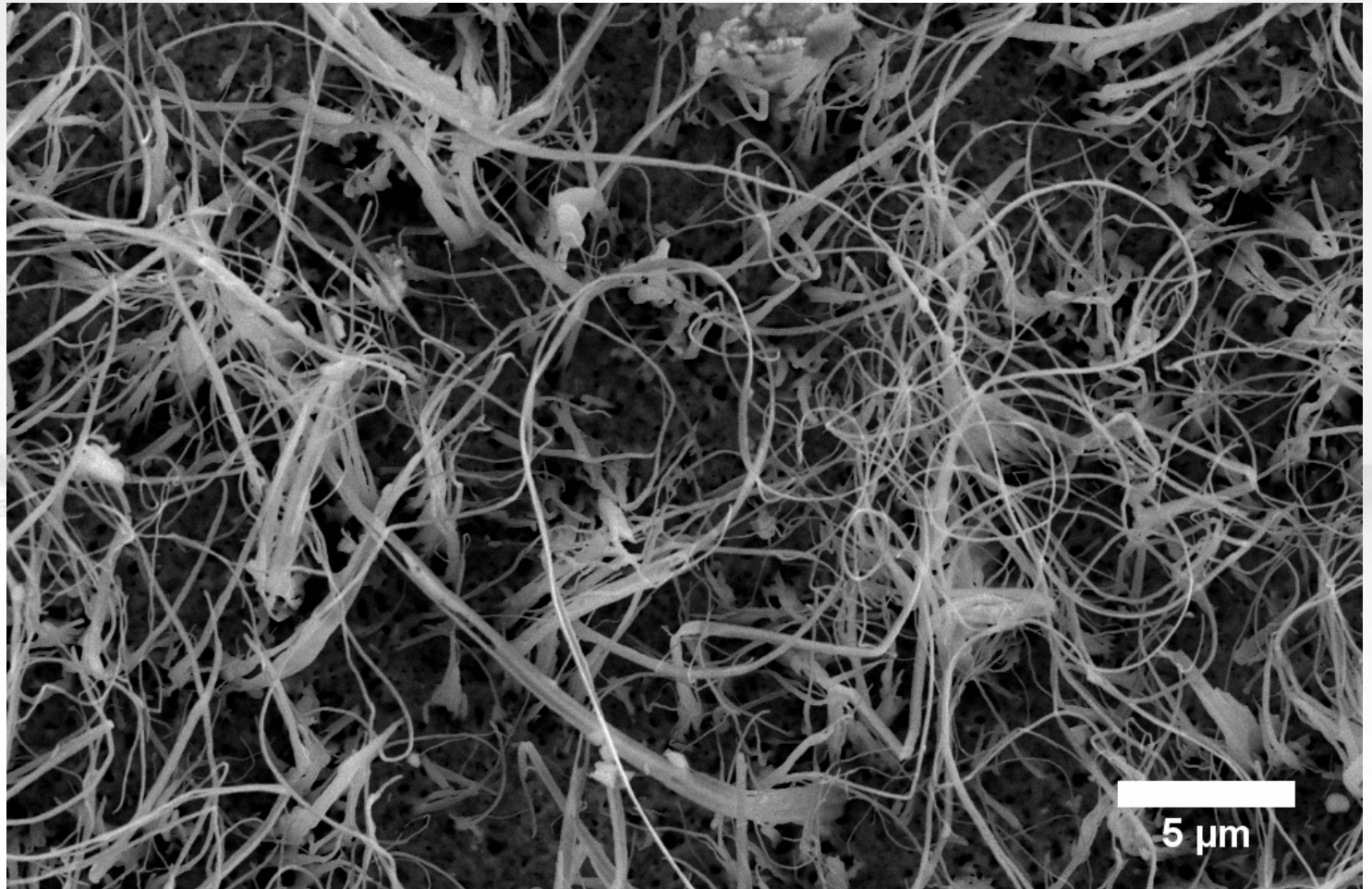
Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Rats' Nest in the Extreme."

Description:
Hydrogen plasma induced reduction of CuO nanowires tie up any and all loose ends. Imagine getting nanogum stuck in THAT thing!



Magnification (3"x4" image): 9.5 KX
Submitted by: Evan Brown

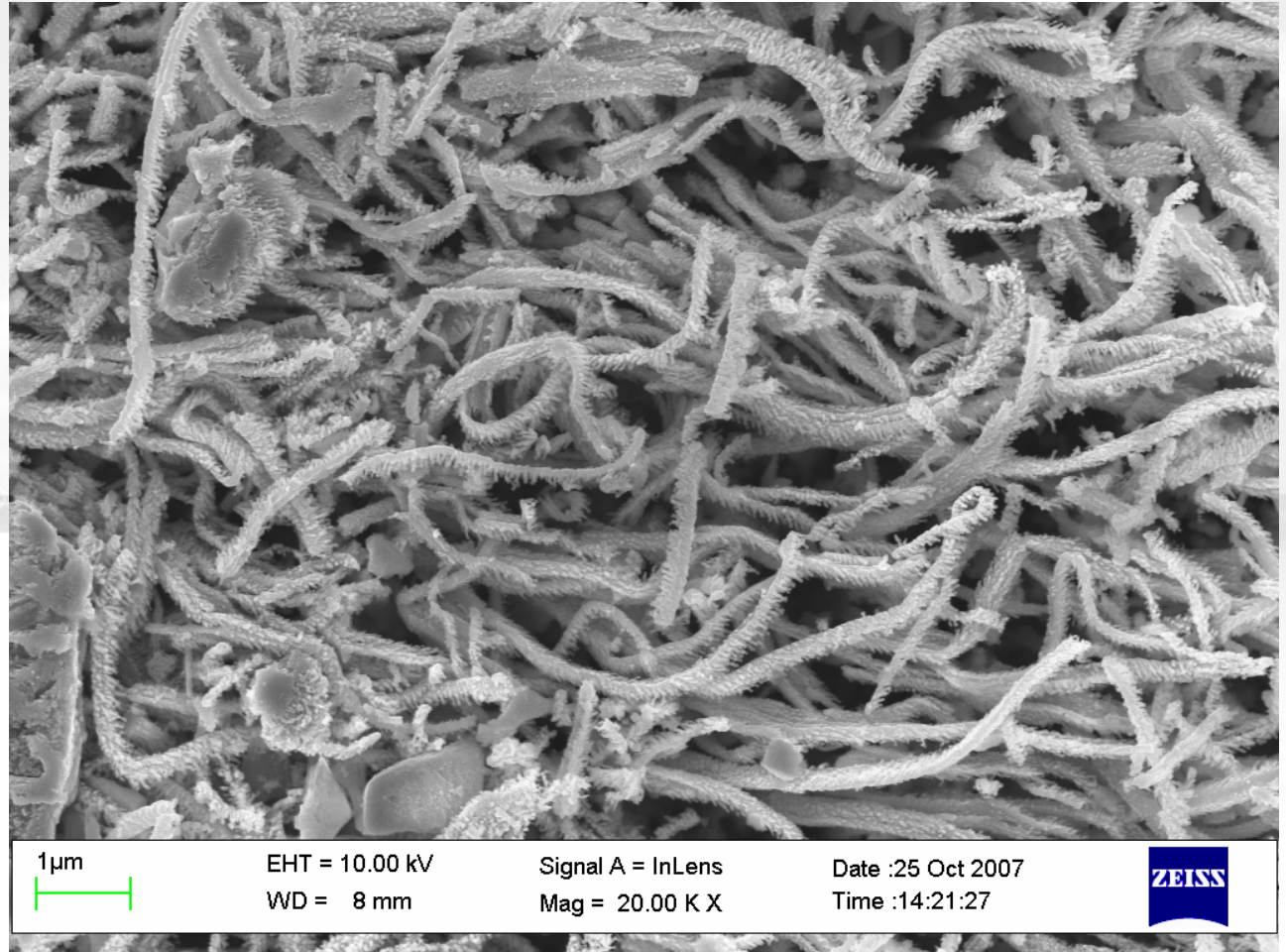
Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Caterpillar Nest."

Description:
Hydrogen plasma induced reduction of CuO nanowires uncovers a nest of tiny creepy-crawlies.



1 μ m



EHT = 10.00 kV

WD = 8 mm

Signal A = InLens

Mag = 20.00 K X

Date :25 Oct 2007

Time :14:21:27

ZEISS

Magnification (3"x4" image): 20 KX
Submitted by: Evan Brown

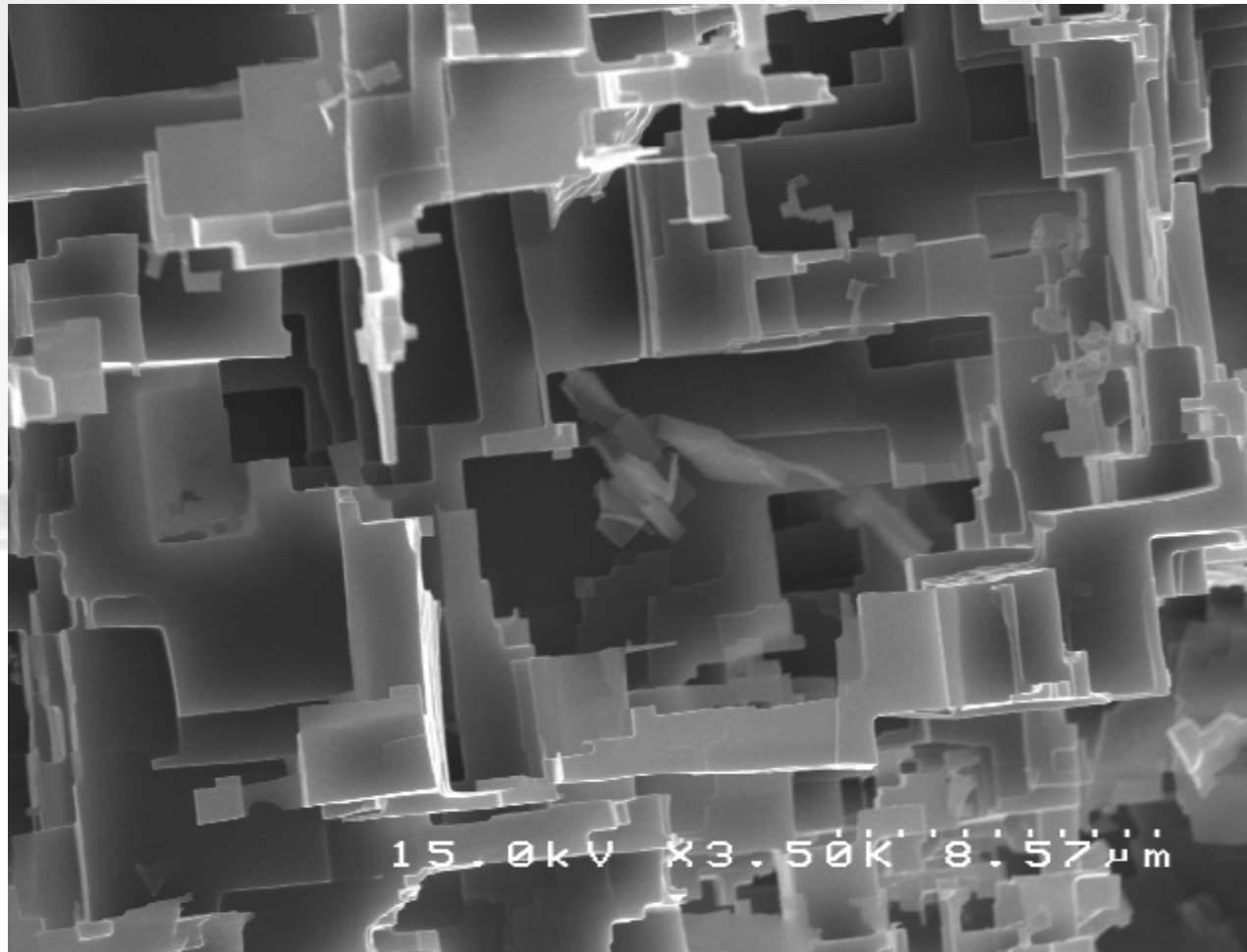
Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
"The Never-Ending
Microstaircase: A
Tribute to Escher"

Description:
Electrochemical
corrosion of aluminum
metal in oxalic acid
under bias left for too
long!

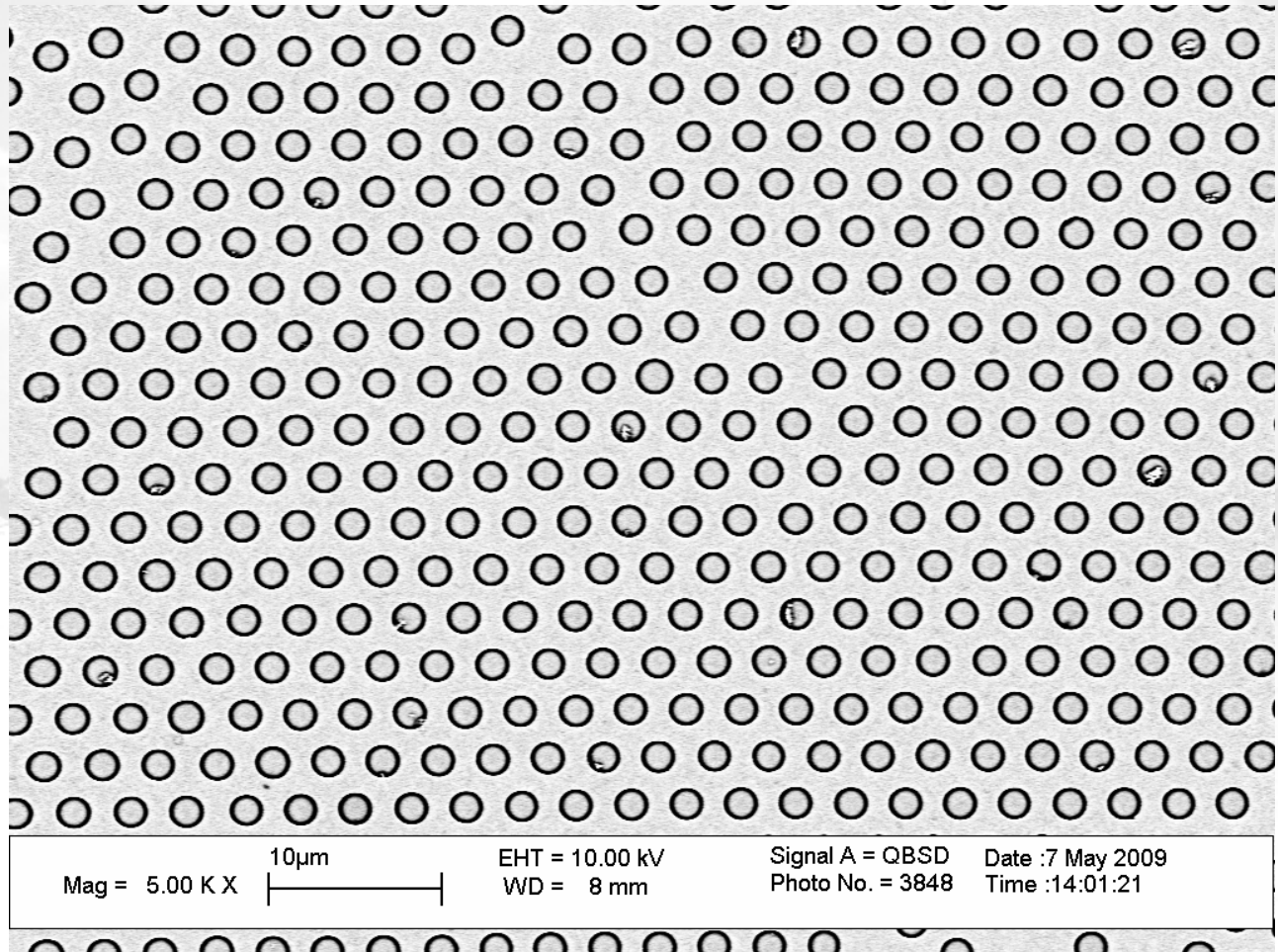


Magnification (3"x4" image): 3.5 KX
Submitted by: Evan Brown

Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest



Micrograph Title:
"It... Doesn't Look Real?!"

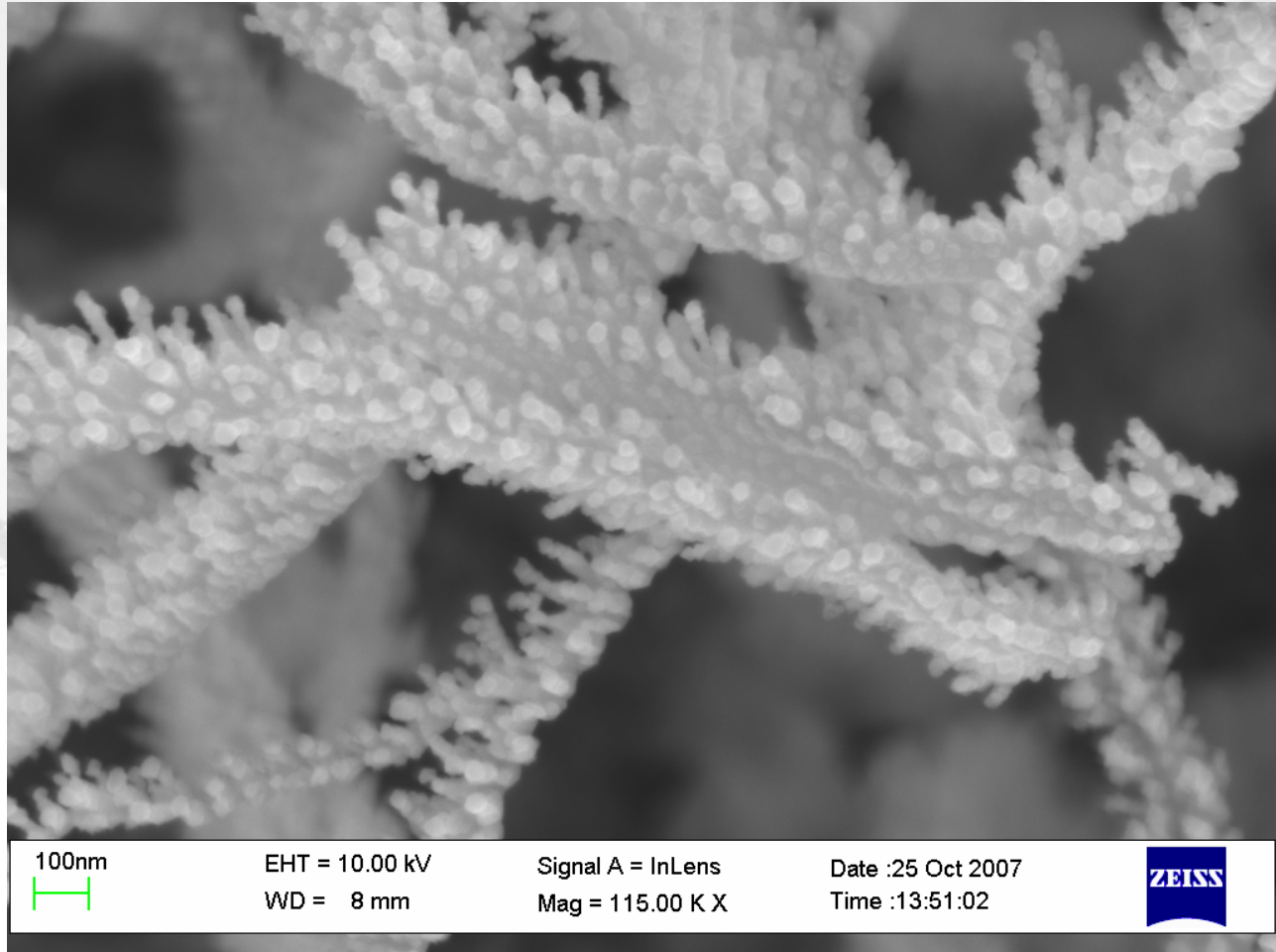
Description:
Backscattered image of a 2-D porous network of metal thin film on an insulating material is strangely beautiful.

Magnification (3"x4" image): 5 KX
Submitted by: Evan Brown

Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest



100nm



EHT = 10.00 kV

WD = 8 mm

Signal A = InLens

Mag = 115.00 K X

Date :25 Oct 2007

Time :13:51:02



Magnification (3"x4" image): 115 KX

Submitted by: Evan Brown

Instrument (Make and Model): LEO 1550 VP FESEM

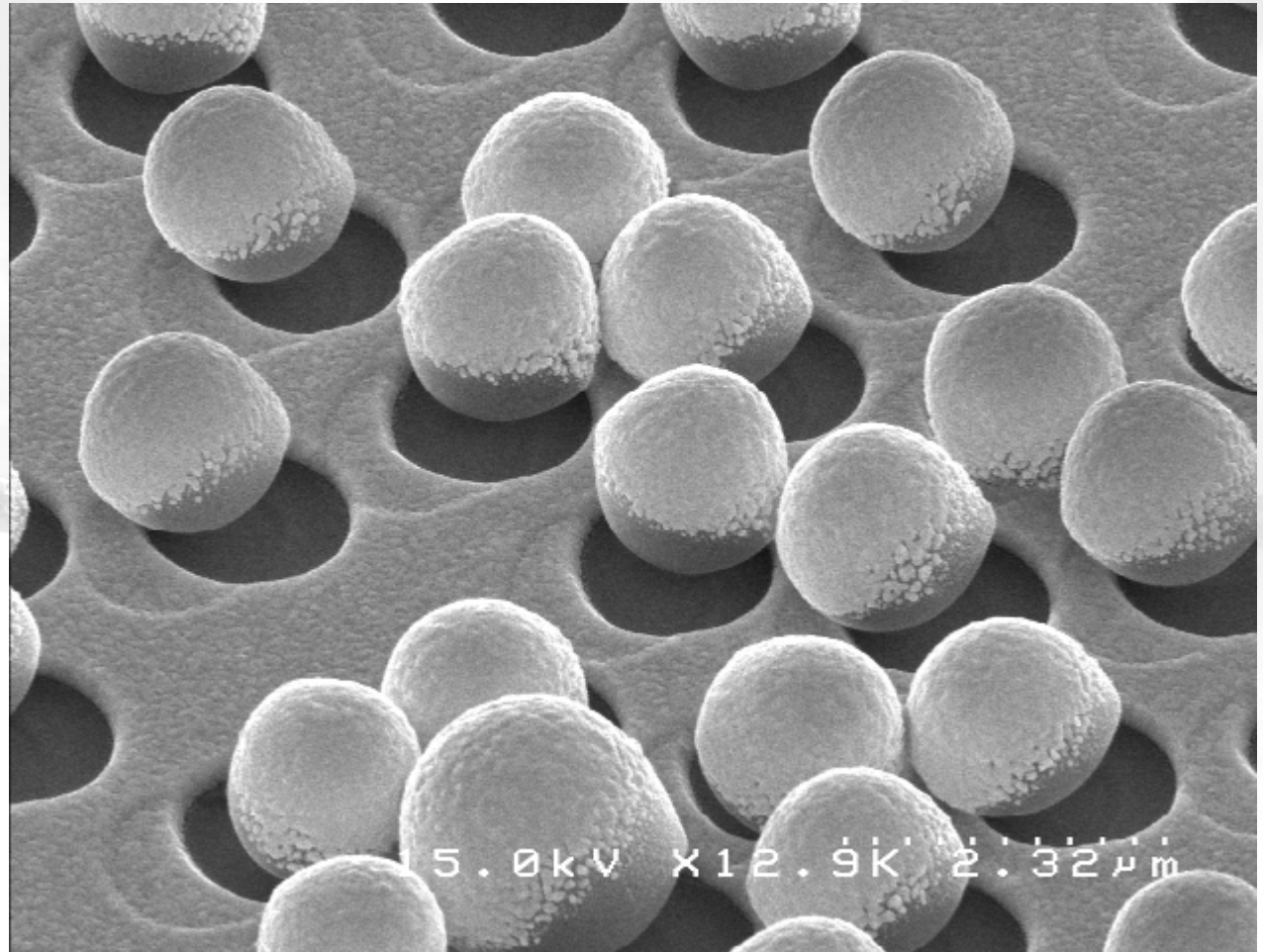
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Powdered
Dumplings."

Description: Metal
deposited on
polystyrene
microspheres leaves a
culinary impression.



Magnification (3"x4" image): 13 KX
Submitted by: Evan Brown

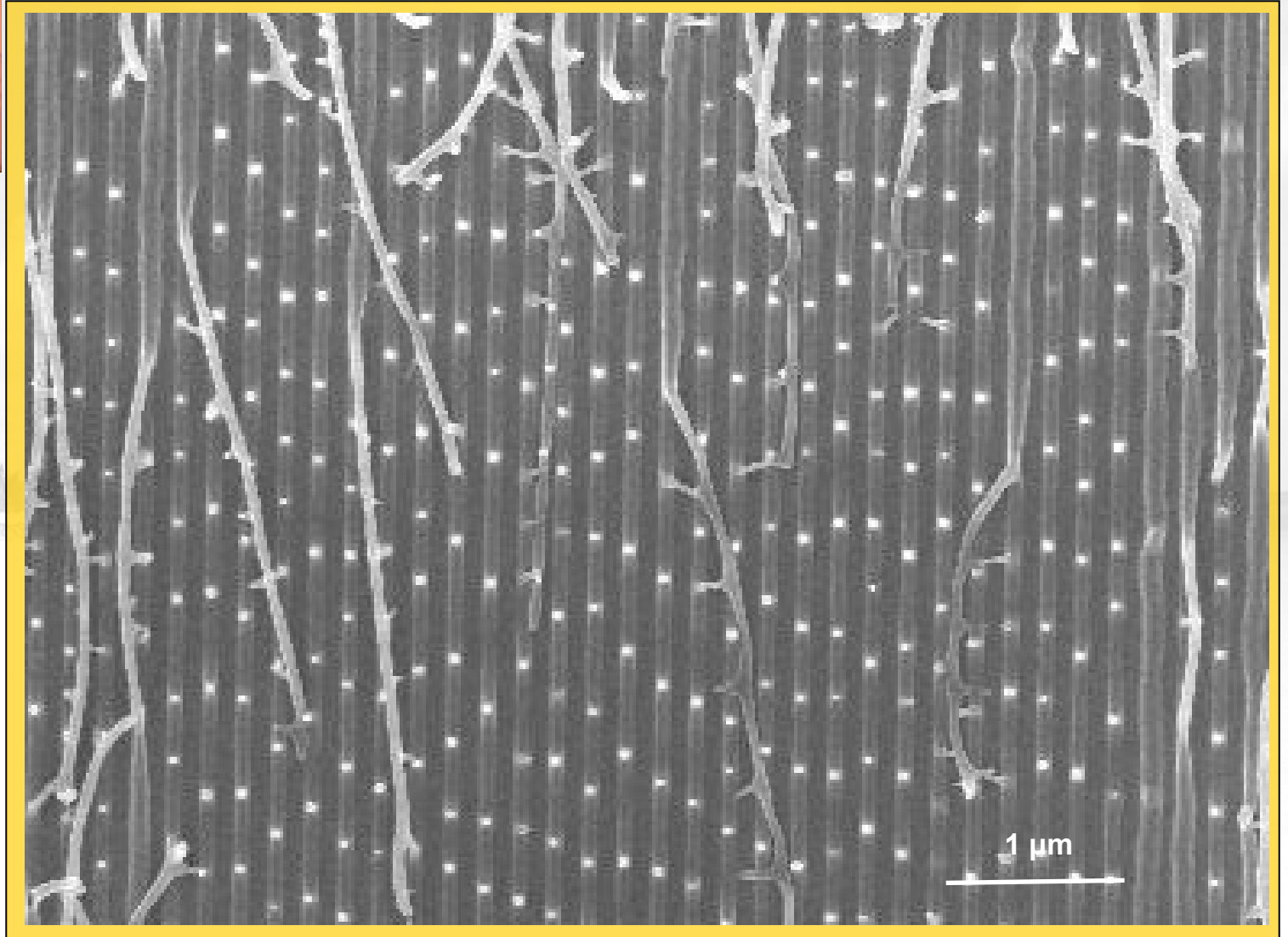
Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



2009 EIPBN MicroGraph Contest

Micrograph Title:
Nanobamboo

Description:
200 nm-period-gratings were peeling off due to adhesion to the guiding palte

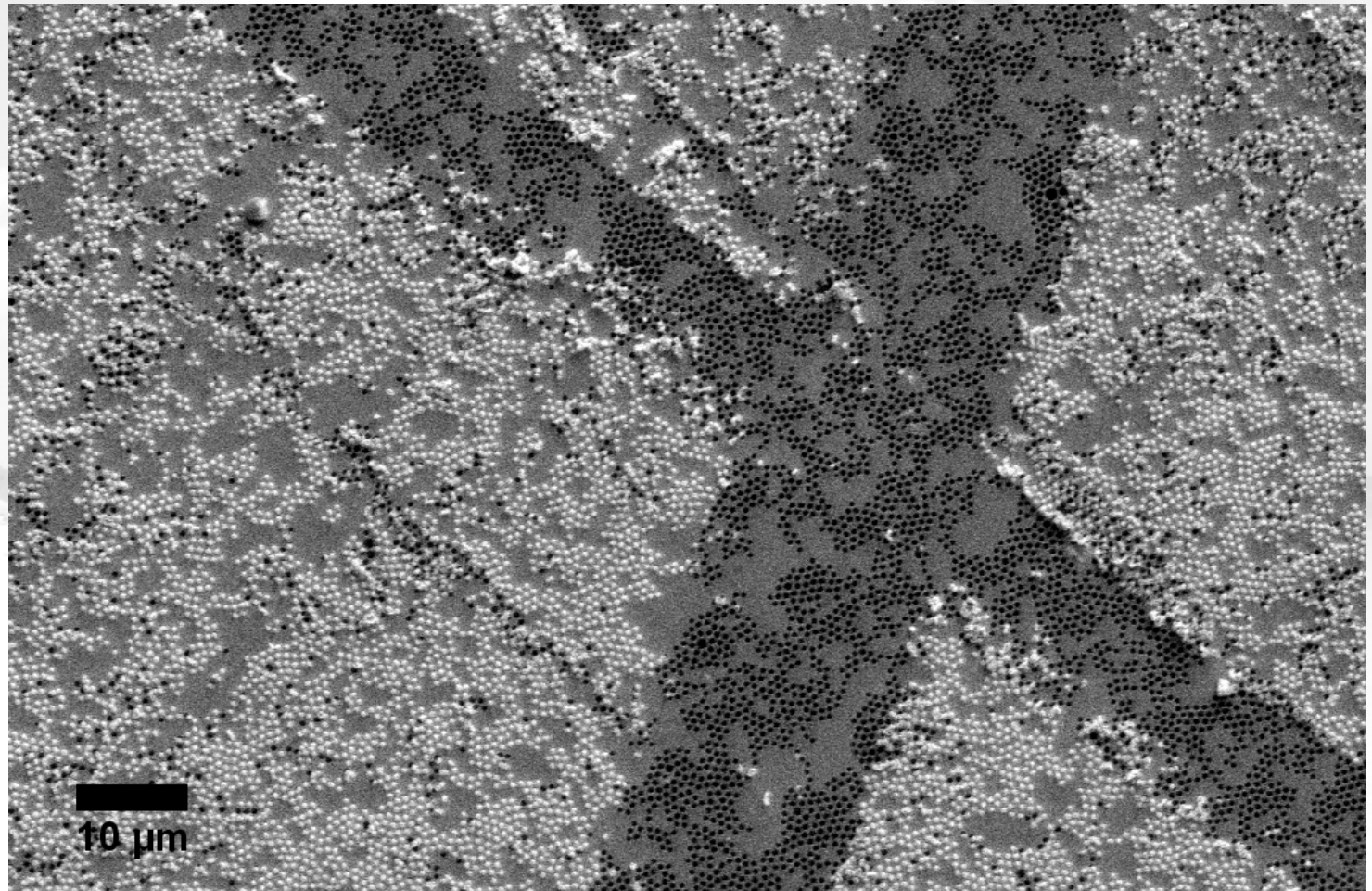


Magnification (3"x4" image): ~30 KX
Submitted by: Ying Wang

Instrument (Make and Model): LEO 1550 SEM
Affiliation: Nanostructure Lab, Princeton Univ.



2009 EIPBN MicroGraph Contest



Micrograph Title: “X
Marks the Spot,
Apparently.”

Description:
Removing polystyrene
spheres used as
lithographic masks
sends a secret signal.

Magnification (3"x4" image): 3 KX
Submitted by: Evan Brown

Instrument (Make and Model): LEO 1550 VP FESEM
Affiliation: California Institute of Technology



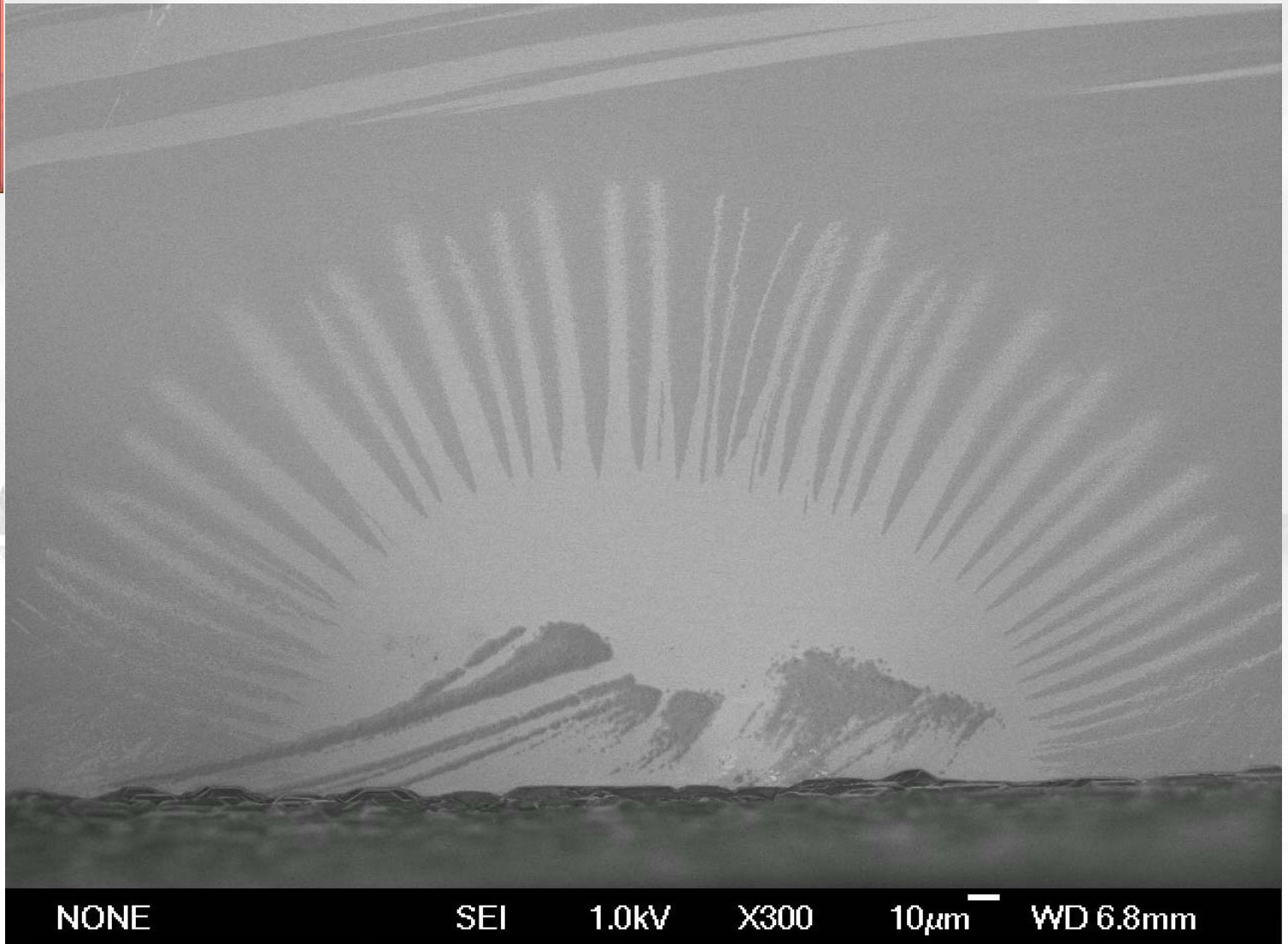
2009 EIPBN MicroGraph Contest

Micrograph Title 1:

The sunrise
behind the
mountains

Description:

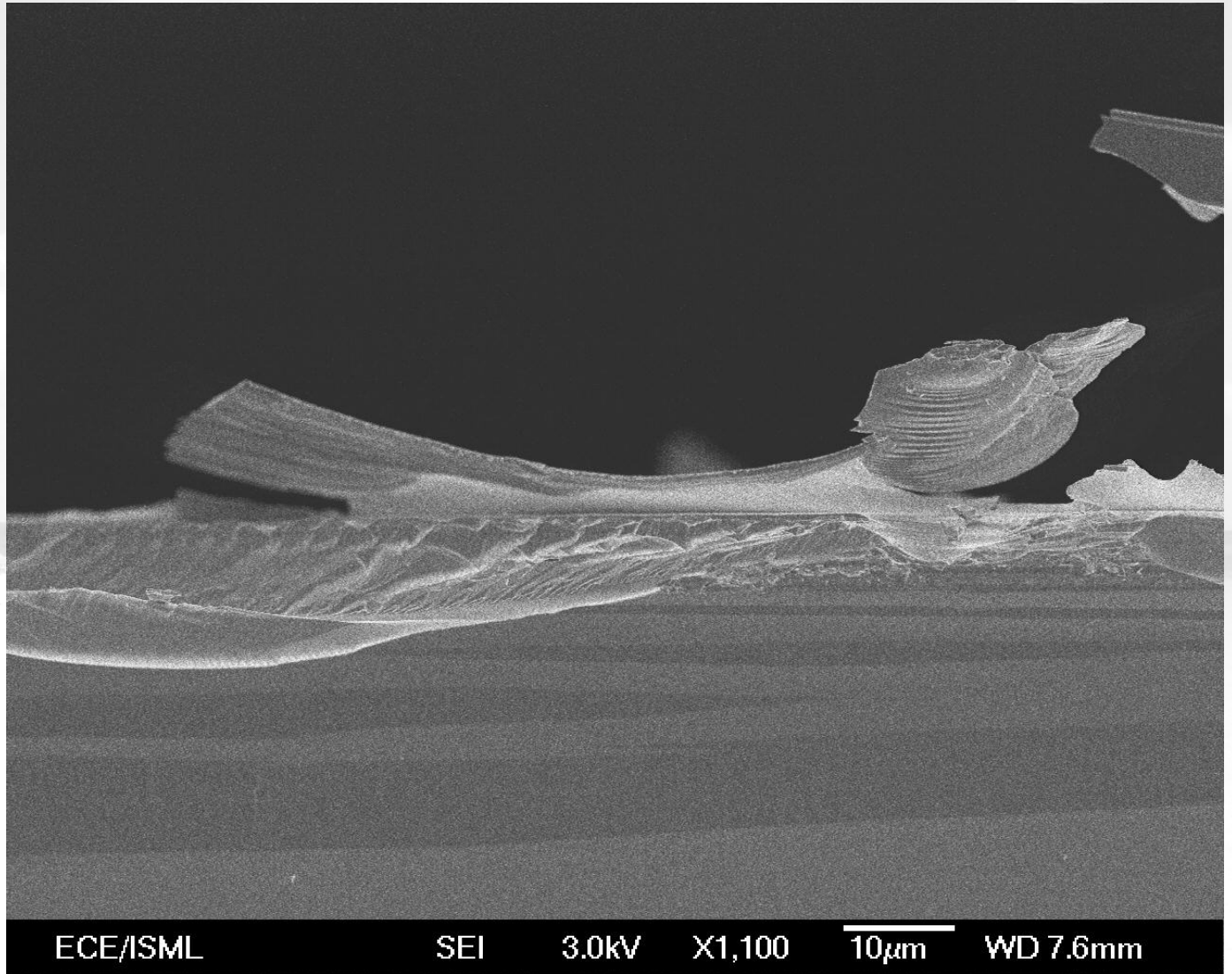
It's the image of
break pattern
formed at the
natural
cleavage of
Silicon
substrate.



Magnification (3"x4" image): 300 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest



Micrograph Title 2:

Digging of
fossils

Description:

It's the image of
feature formed
at the cleavage
of Silicon
substrate.

Magnification (3"x4" image): 1100, **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



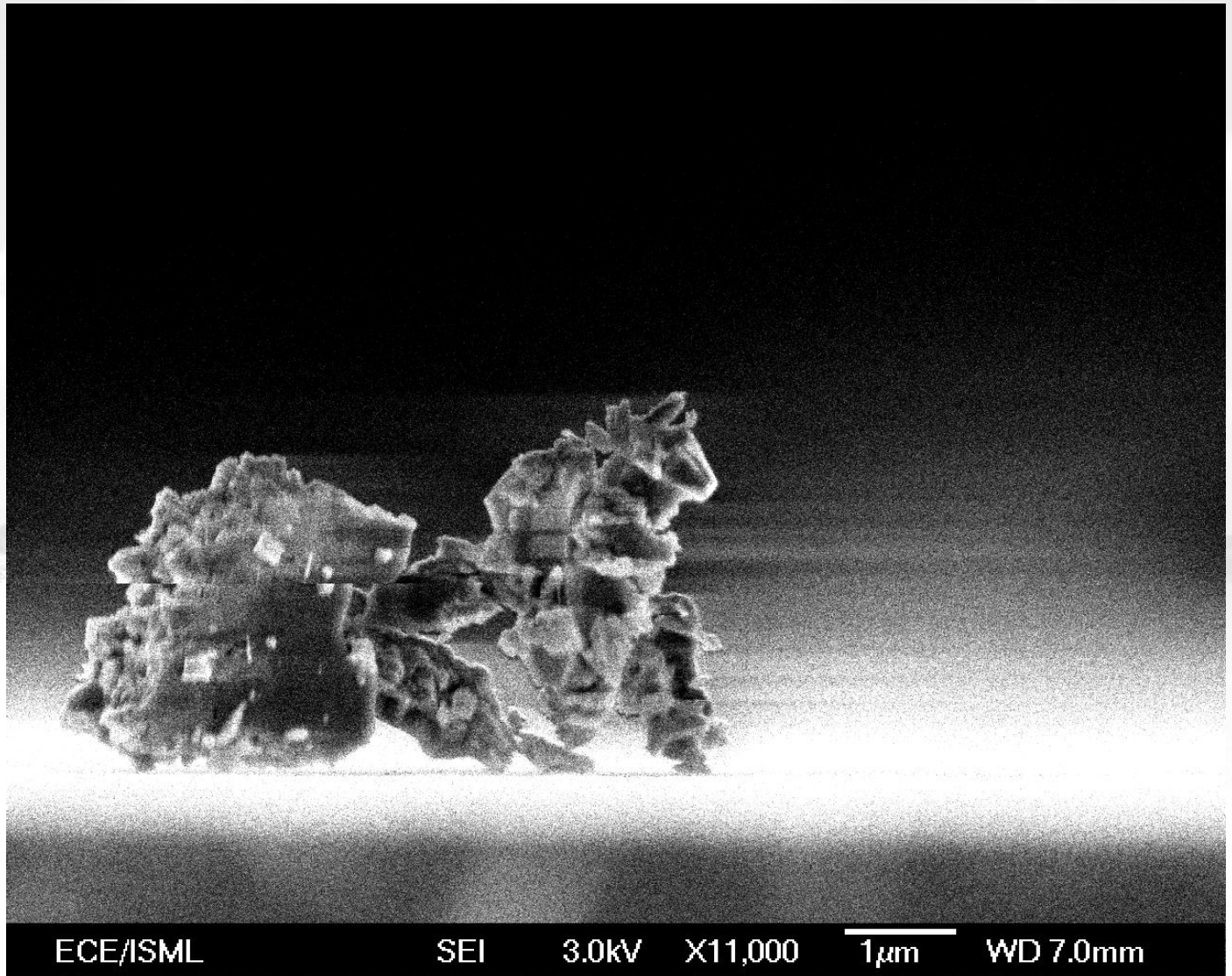
2009 EIPBN MicroGraph Contest

Micrograph Title 3:

Trojan horse

Description:

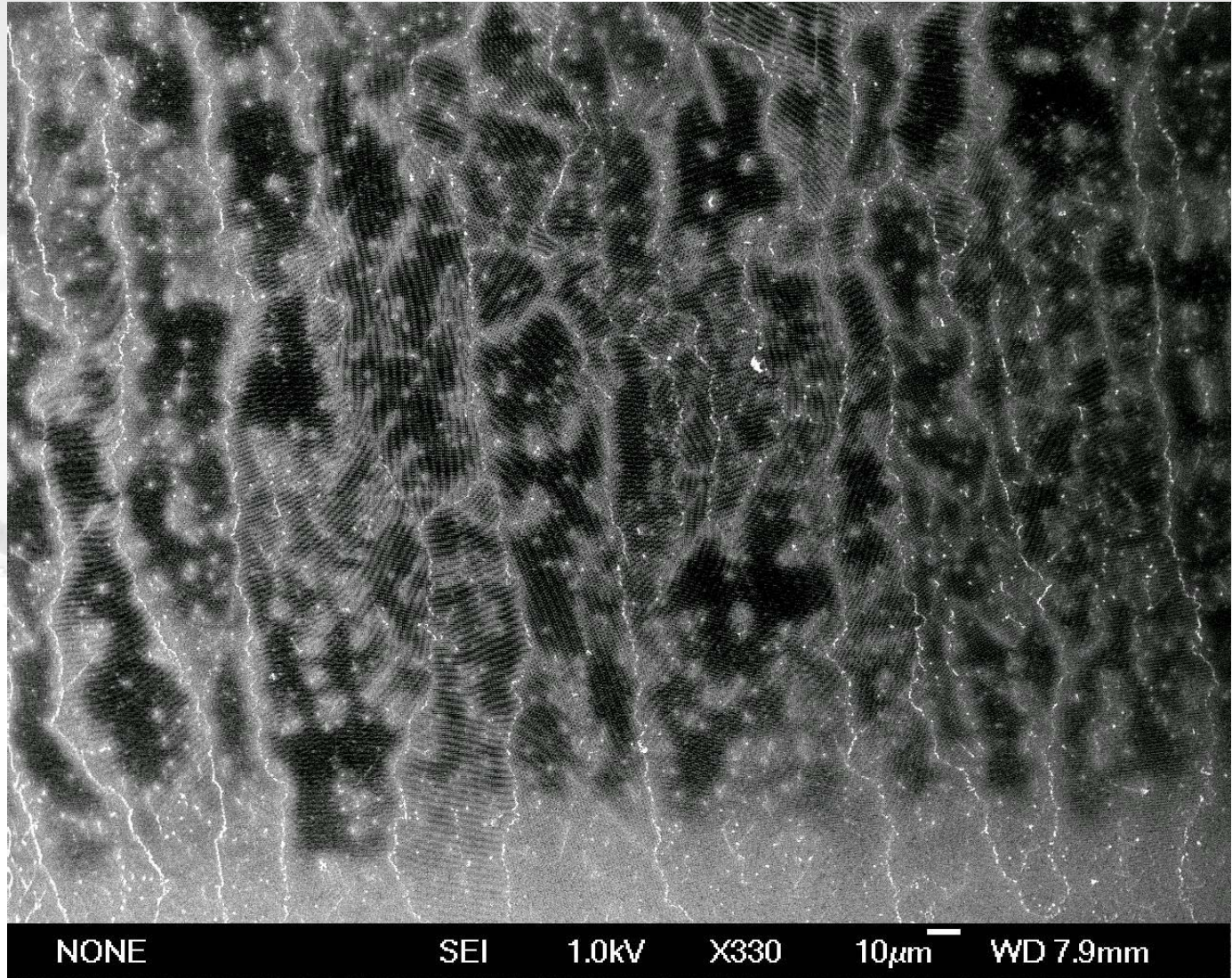
It's the image of feature formed at the cleavage of Silicon substrate.



Magnification (3"x4" image): 11,000 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest



NONE

SEI

1.0kV

X330

10 μ m

WD 7.9mm

Micrograph Title 4:

Picasso at
nanoscale:
What do you
in this image?

Description:

It is the pattern
produced by the
self assembly of
polystyrene
nanospheres
deposited on
silicon substrate
and shows with
grains of
random sizes.

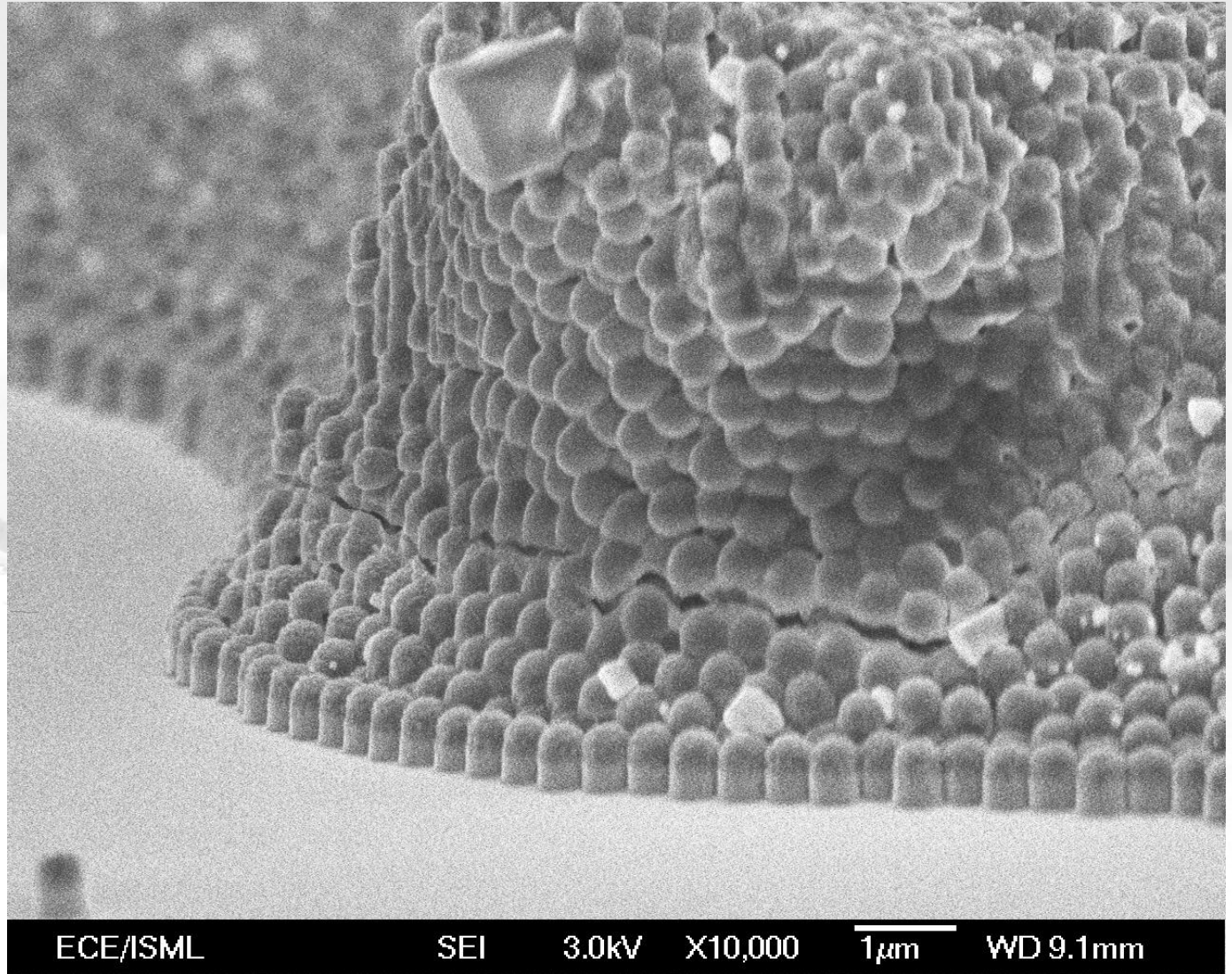
Magnification (3"x4" image): 330

Instrument (Make and Model): JEOL JSM-6700F

Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest



Micrograph Title 5:

Nanohighway
- Creating a
giant passage
through nano-
mountains

Description:

It's the image of
pattern created
after ion-beam
etching of
multilayer
assembly of
polystyrene
nanoparticles.

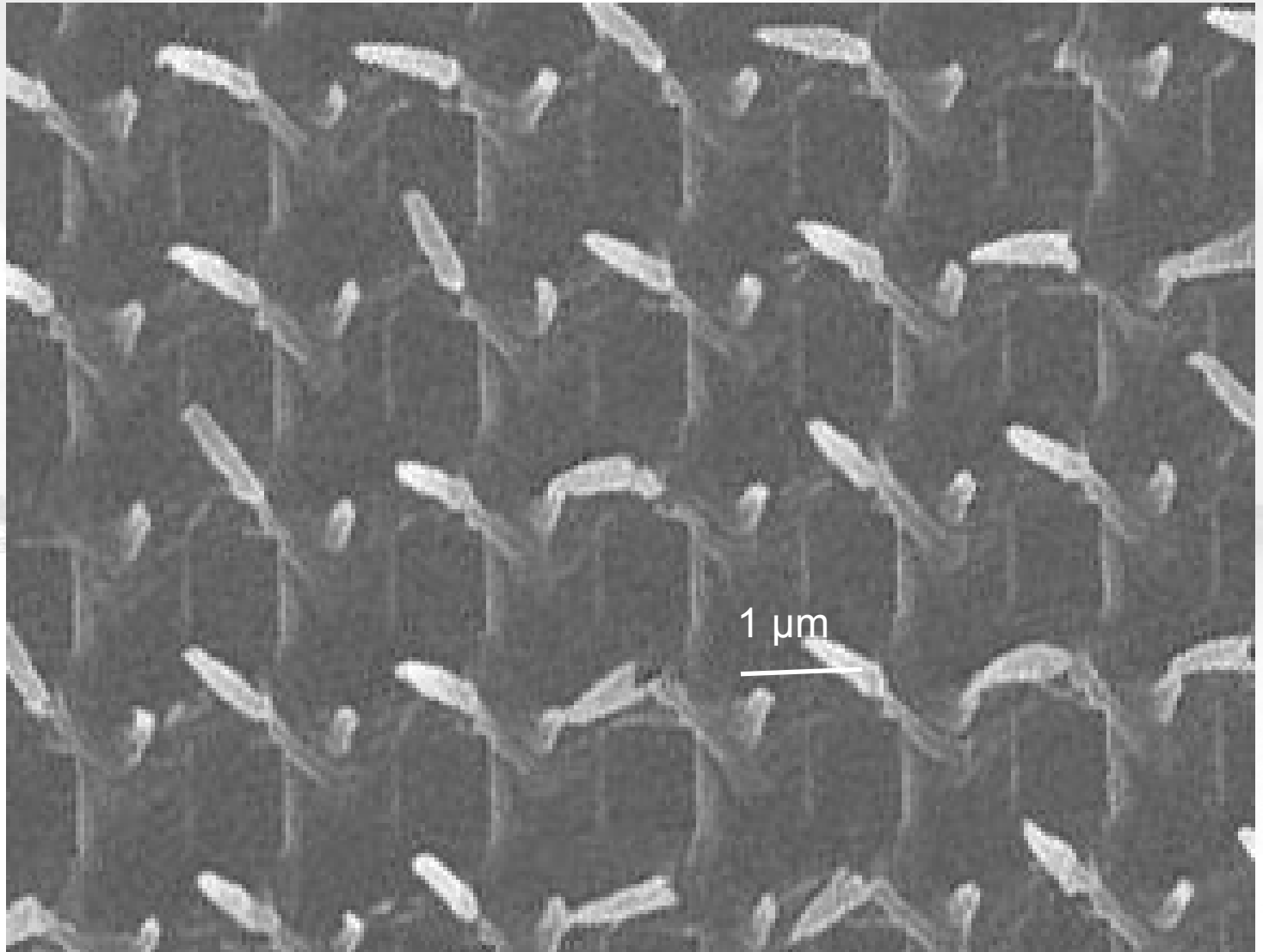
Magnification (3"x4" image): 10,000 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest

**Micrograph
Title: Holy
cross**

**Description:
Imprint SBS
copolymer film
with a 1-um-
period pillar mold**



**Magnification (3"x4" image): 18KX
Submitted by: Ying Wang**

**Instrument (Make and Model): LEO 1550 SEM
Affiliation: Nanostructure Lab, Princeton Univ.**



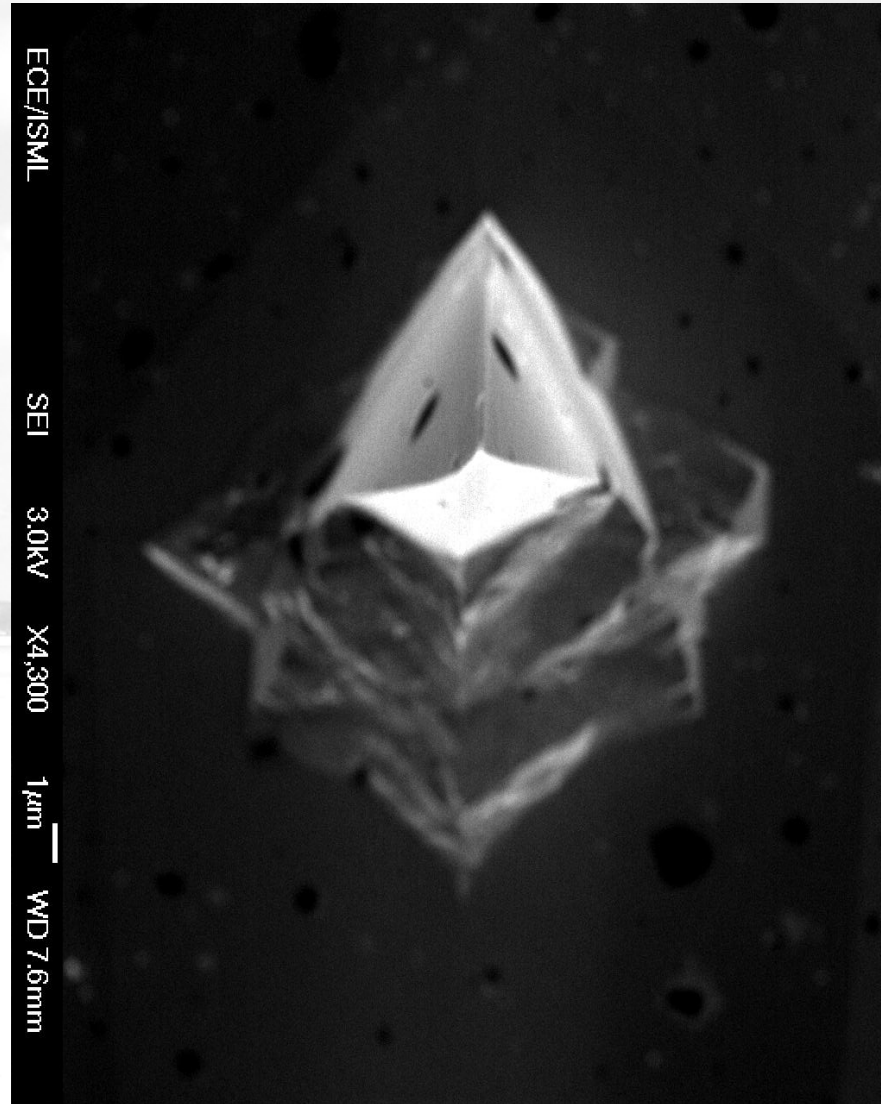
2009 EIPBN MicroGraph Contest

Micrograph Title 6:

I manipulate things at
nanoscale, what you want
me to do?

Description:

Scanning probe
microscope tip



Magnification (3"x4" image): 4300

Instrument (Make and Model): JEOL JSM-6700F

Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



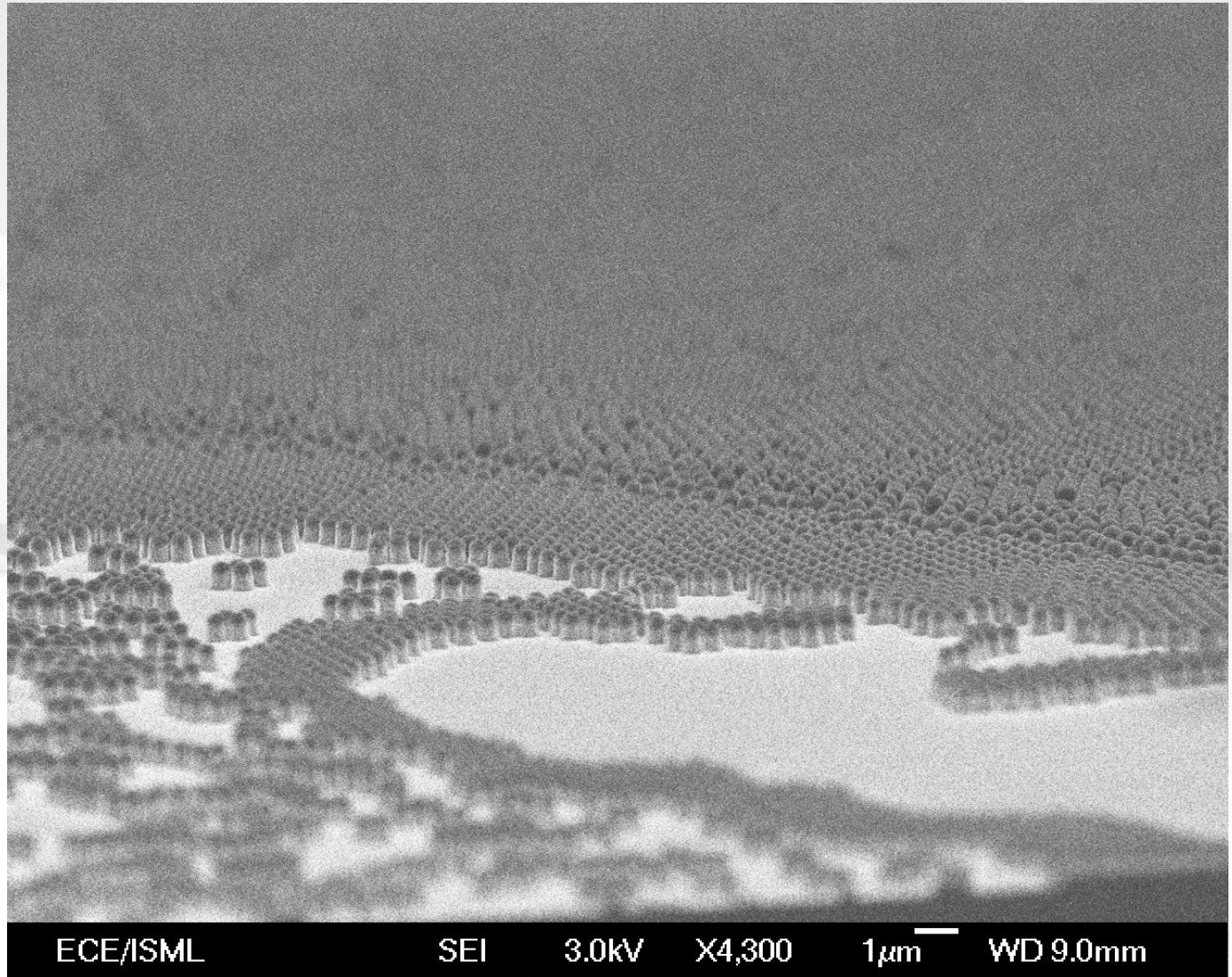
2009 EIPBN MicroGraph Contest

Micrograph Title 7:

For war or peace?
Nano-army in battle
field

Description:

Image of etched
polystyrene
nanoparticles



Magnification (3"x4" image): 4300 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest

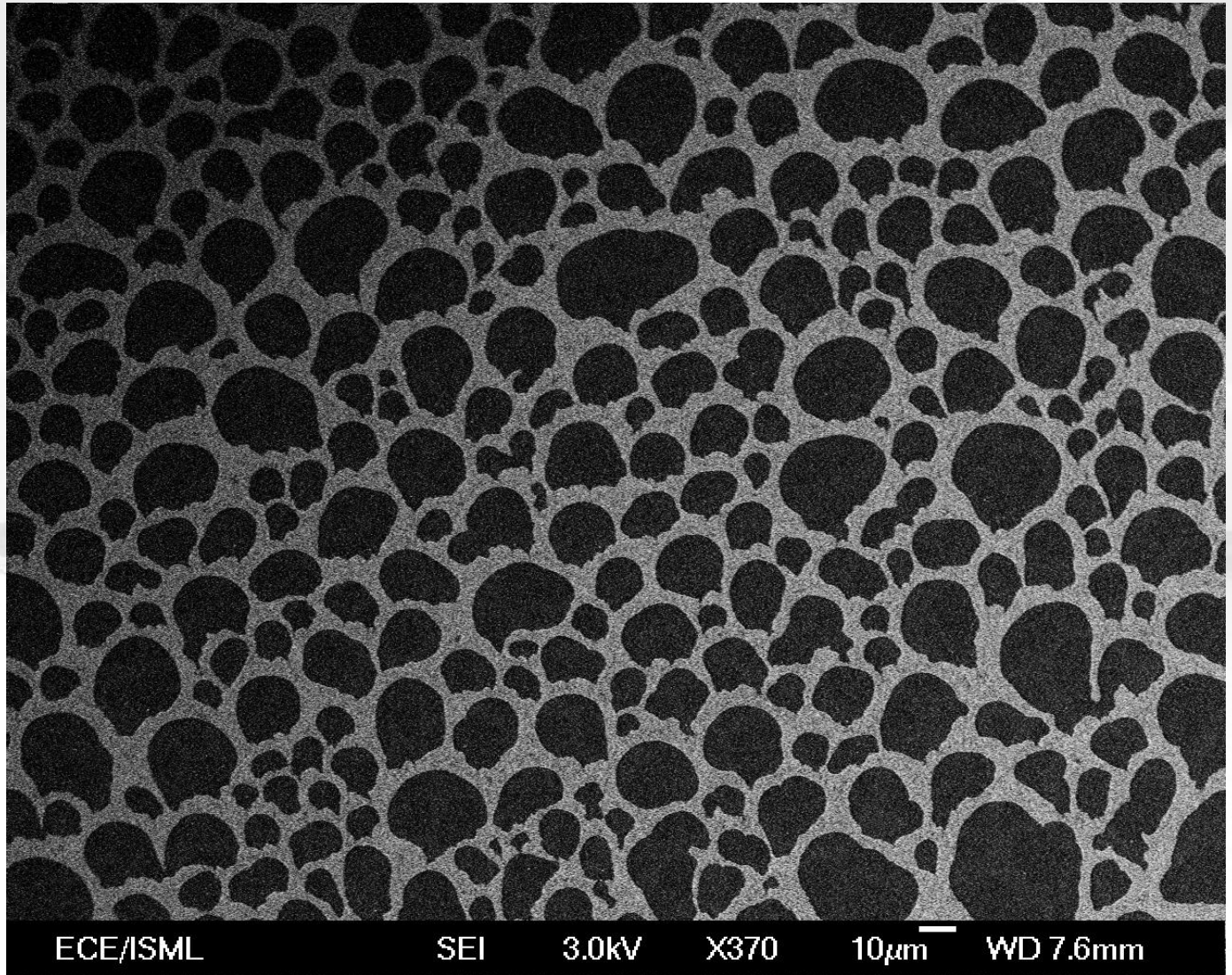
Micrograph

Title 8:

Painting

Description:

It's the image of pattern created by scattered self assembly of polystyrene nanoparticles.



Magnification (3"x4" image): 370

Instrument (Make and Model): JEOL JSM-6700F

Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



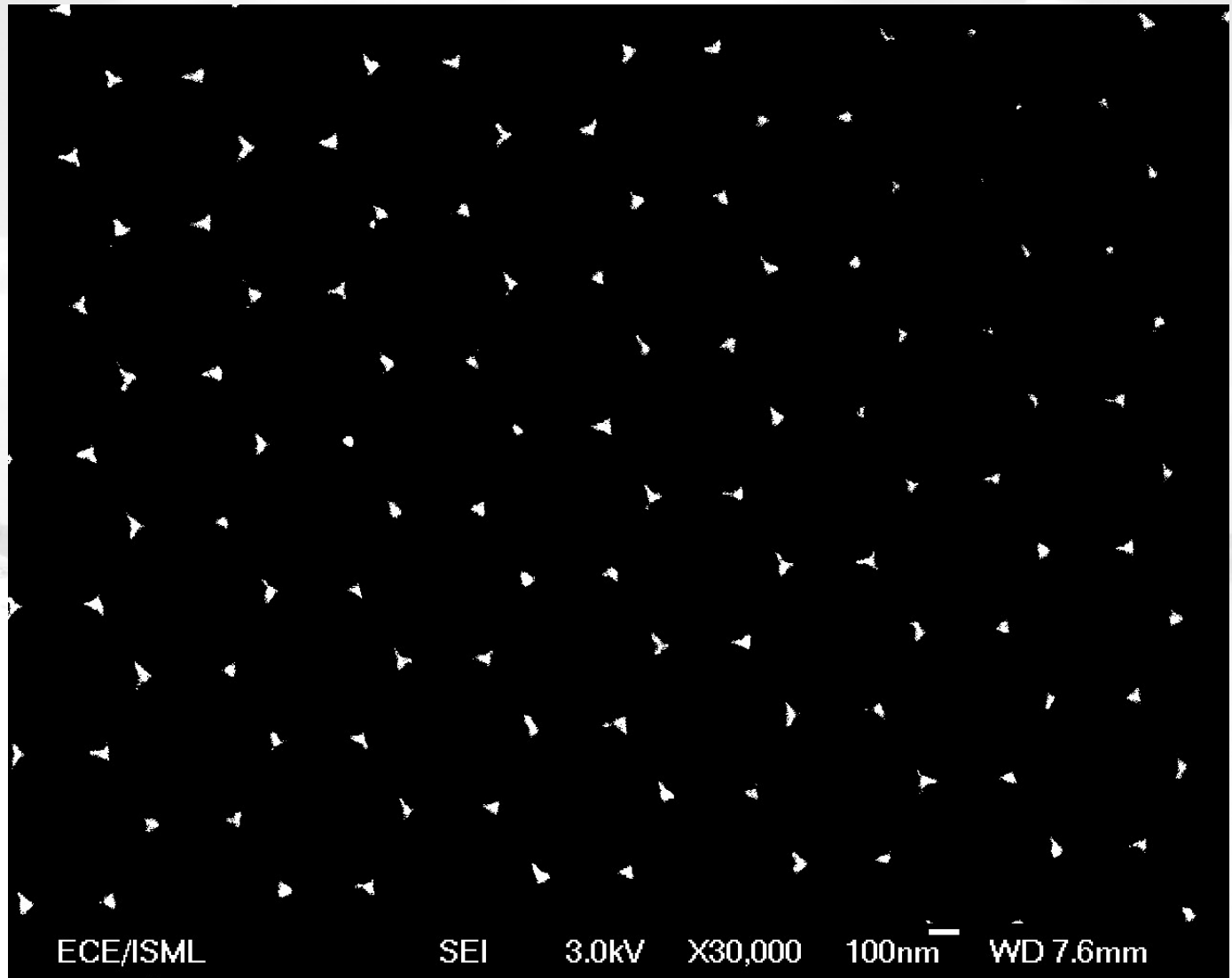
2009 EIPBN MicroGraph Contest

Micrograph Title 9:

A Starry Night,
Where is the
moon?

Description:

It's the image of
dots created
after
evaporation of
metal through a
monolayer of
self assembled
polystyrene
nanoparticles,
followed by
liftoff



Magnification (3"x4" image): 30,000 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore

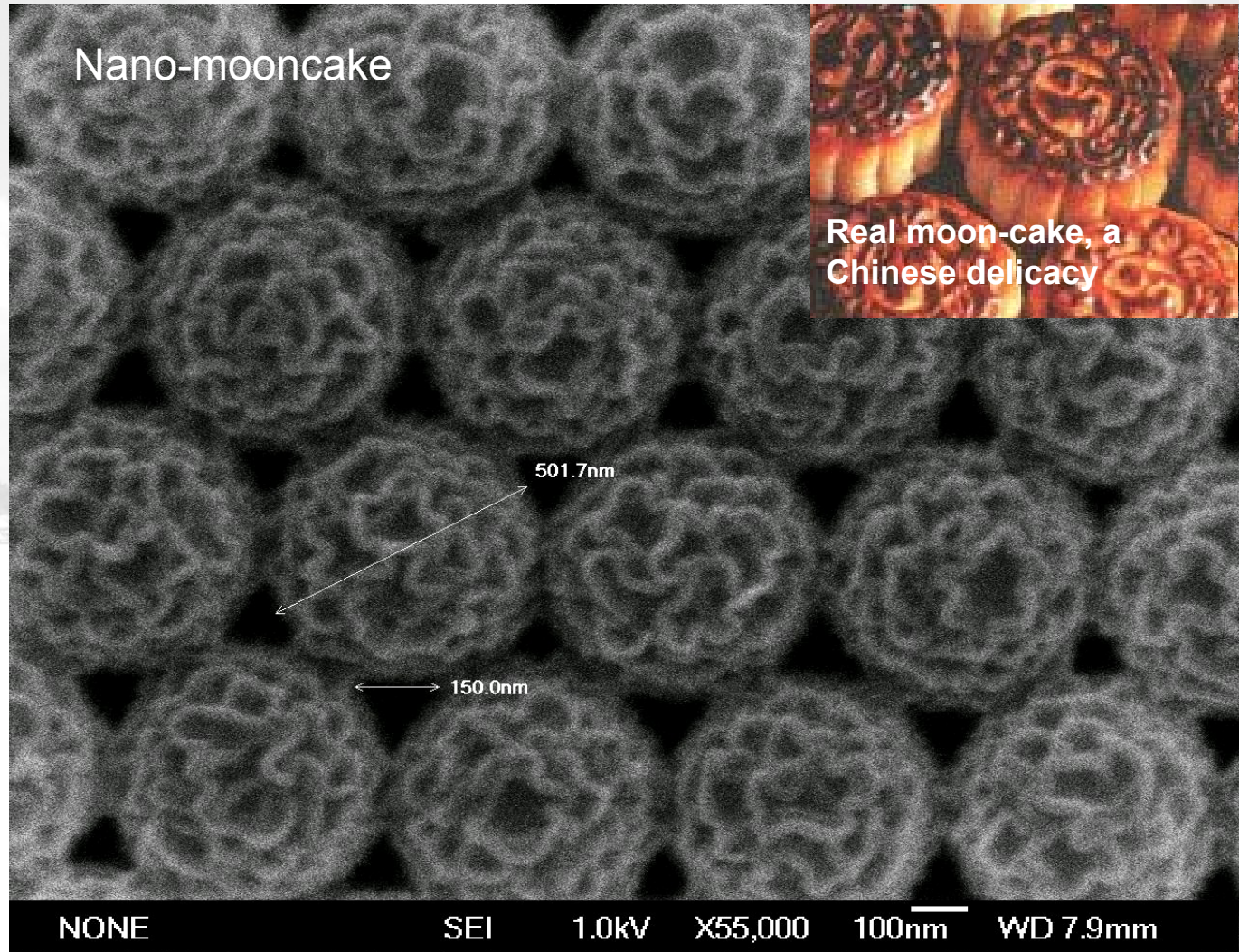


2009 EIPBN MicroGraph Contest

Nano-mooncake



Real moon-cake, a Chinese delicacy



NONE

SEI

1.0KV

X55,000

100nm

WD 7.9mm

Micrograph Title 10:

Nano-mooncake, for your big appetite

Description:

Surface of nanoparticles is modified after etching with fluorine ion-beam etching. Moon-cake is the food eaten during Chinese new year, the biggest festival of Chinese culture.

Magnification (3"x4" image): 55,000

Instrument (Make and Model): JEOL JSM-6700F

Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore

2009 EIPBN MicroGraph Contest

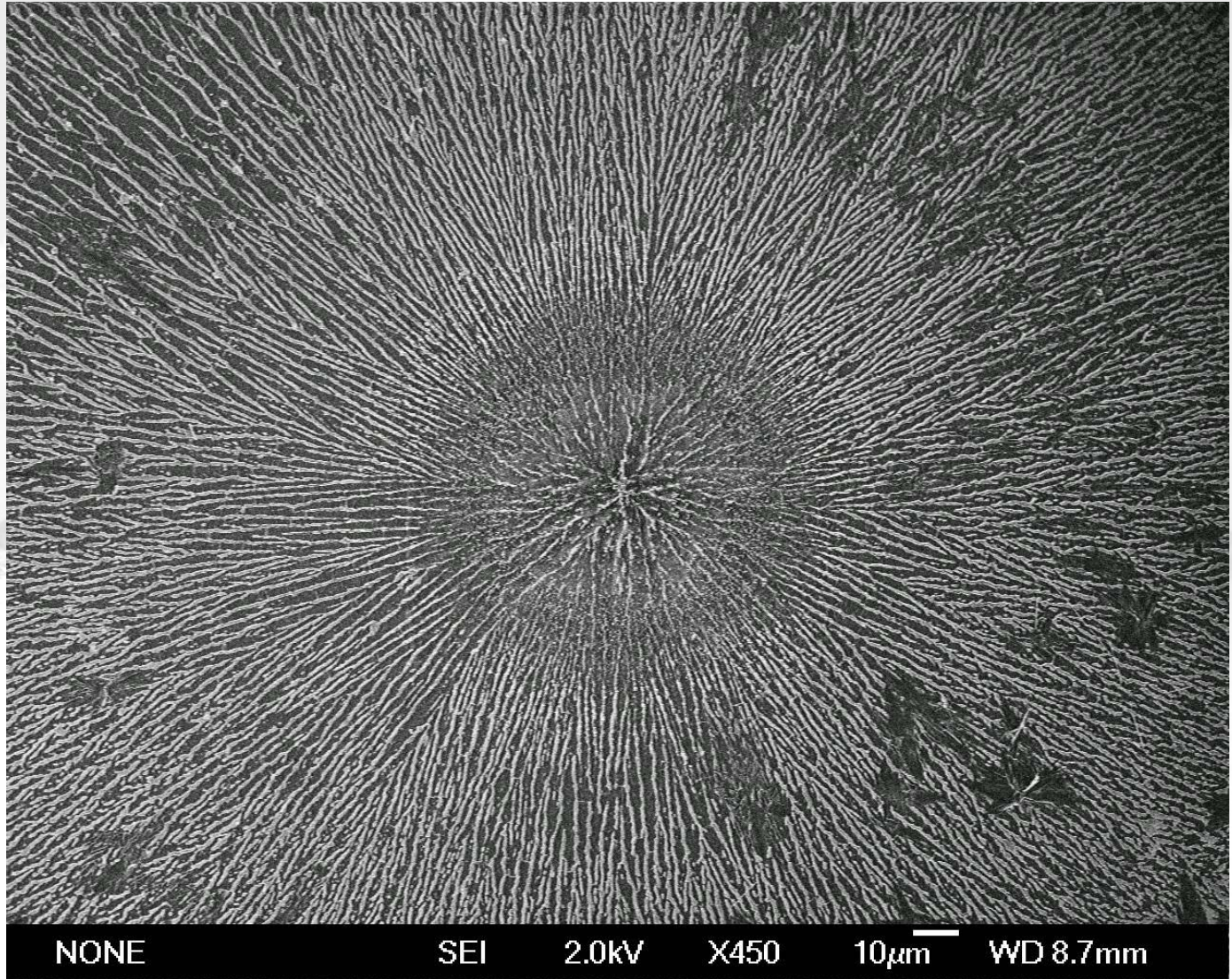


Micrograph Title 11:

Epicenter of
explosion at
nanoscale

Description:

Triton-X was
added to
nanoparticles
solution and
dropped at
substrate. This
pattern looks like
an image of
nano-explosion.



Magnification (3"x4" image): 450

Instrument (Make and Model): JEOL JSM-6700F

Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



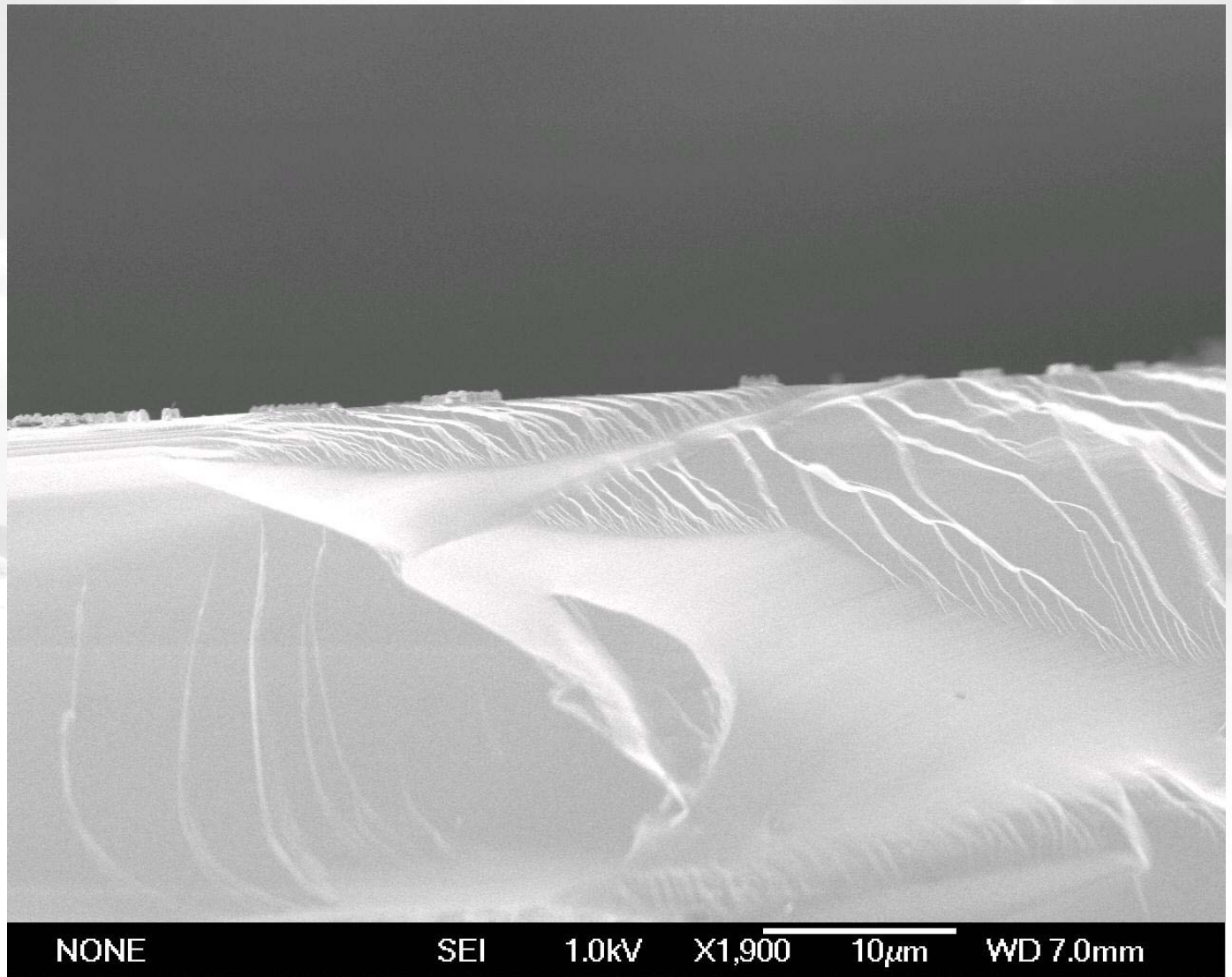
2009 EIPBN MicroGraph Contest

Micrograph Title 12:

Sand dunes at
nanoscale

Description:

It is the break
pattern of Silicon
substrate. It
shows as if a
group of people
are trying to
cross the desert
at the top



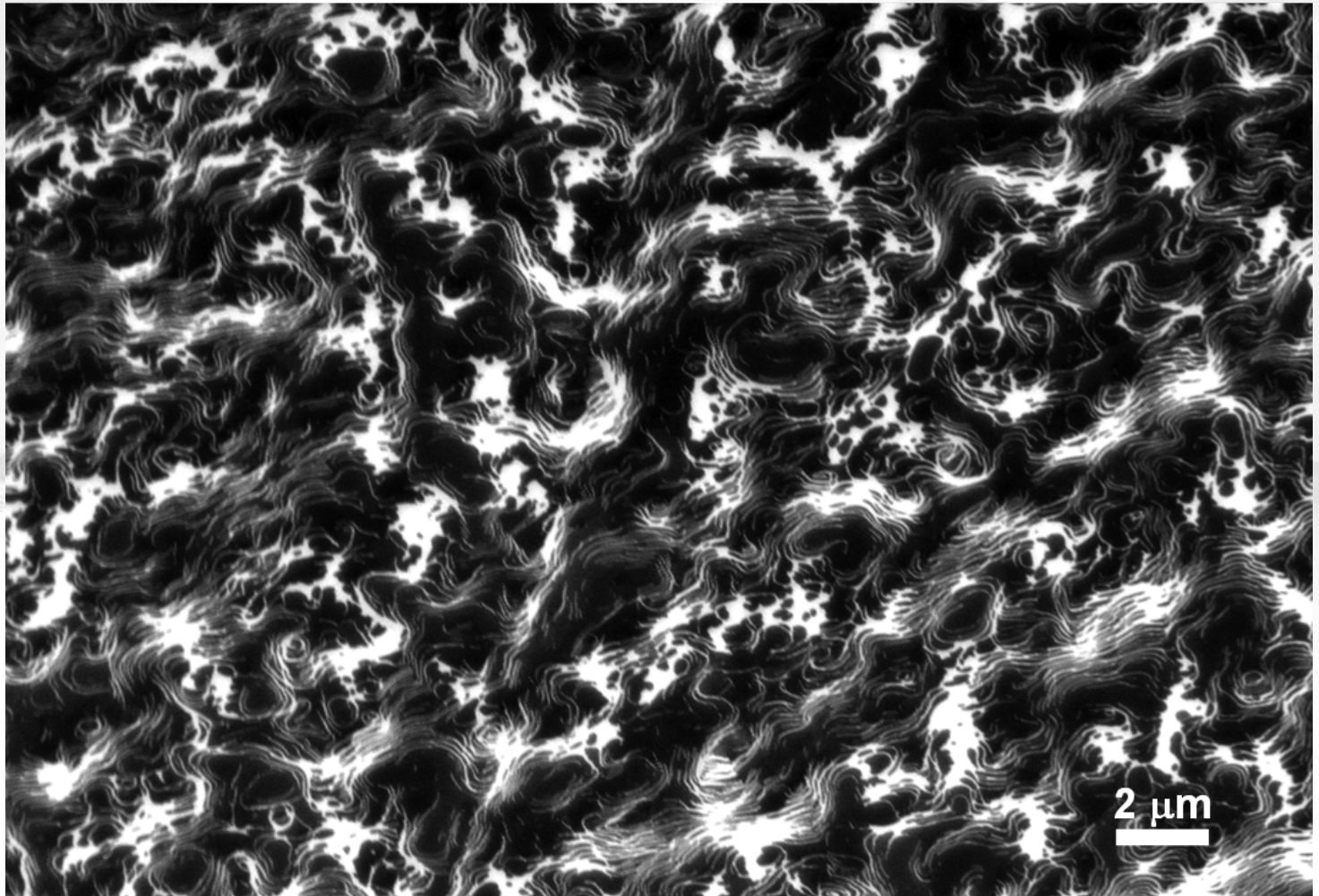
Magnification (3"x4" image): 1900 **Instrument (Make and Model):** JEOL JSM-6700F
Submitted by: Lalit Kumar Verma, Vivian Ng **Affiliation:** ISML, National University of Singapore



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Rough Sea"

Description:
Rh(110) with TiO_x
covered regions
(dark in SEM).



Magnification (3"x4" image): 4.00 KX

Instrument (Make and Model): Omicron/ZEISS UHV SEM

Submitted by: Michael Schirmer, Marie-Madeleine Walz and Hubertus Marbach

Affiliation: University Erlangen-Nuremberg, Germany

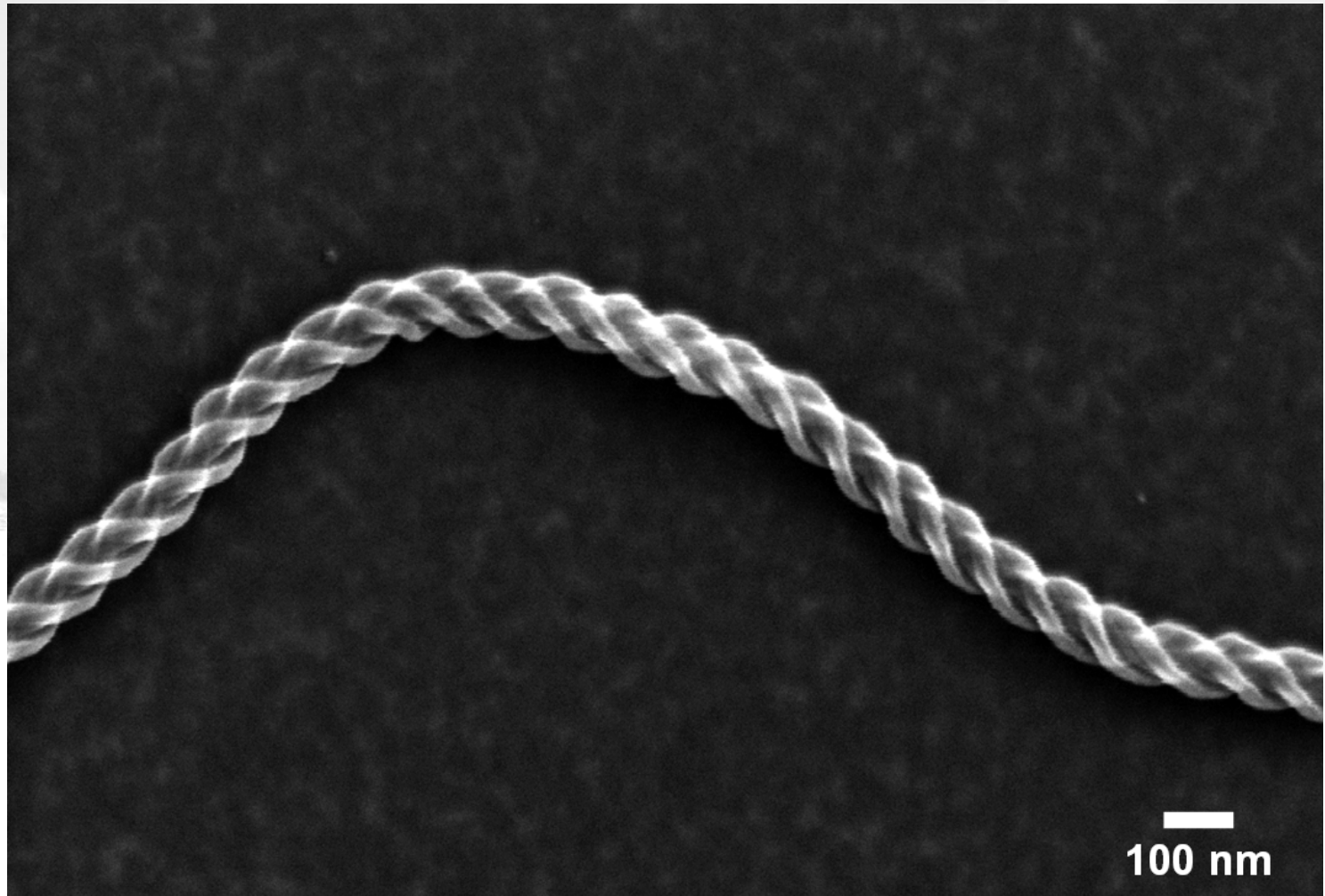


2009 EIPBN MicroGraph Contest

Micrograph Title:
"Screwed up"

Description:
Interwoven structure
generated by CVD with
ethyne resulting in the
depicted "rope-shape"

We acknowledge the
fabrication of the
shown structure by
Prof. Dr. Nadejda
Popovska and Katya
Danova (University
Erlangen-Nuremberg,
Germany).



Magnification (3"x4" image): 60.18 KX

Instrument (Make and Model): Omicron/ZEISS UHV SEM

Submitted by: Michael Schirmer, Marie-Madeleine Walz and Hubertus Marbach

Affiliation: University Erlangen-Nuremberg, Germany

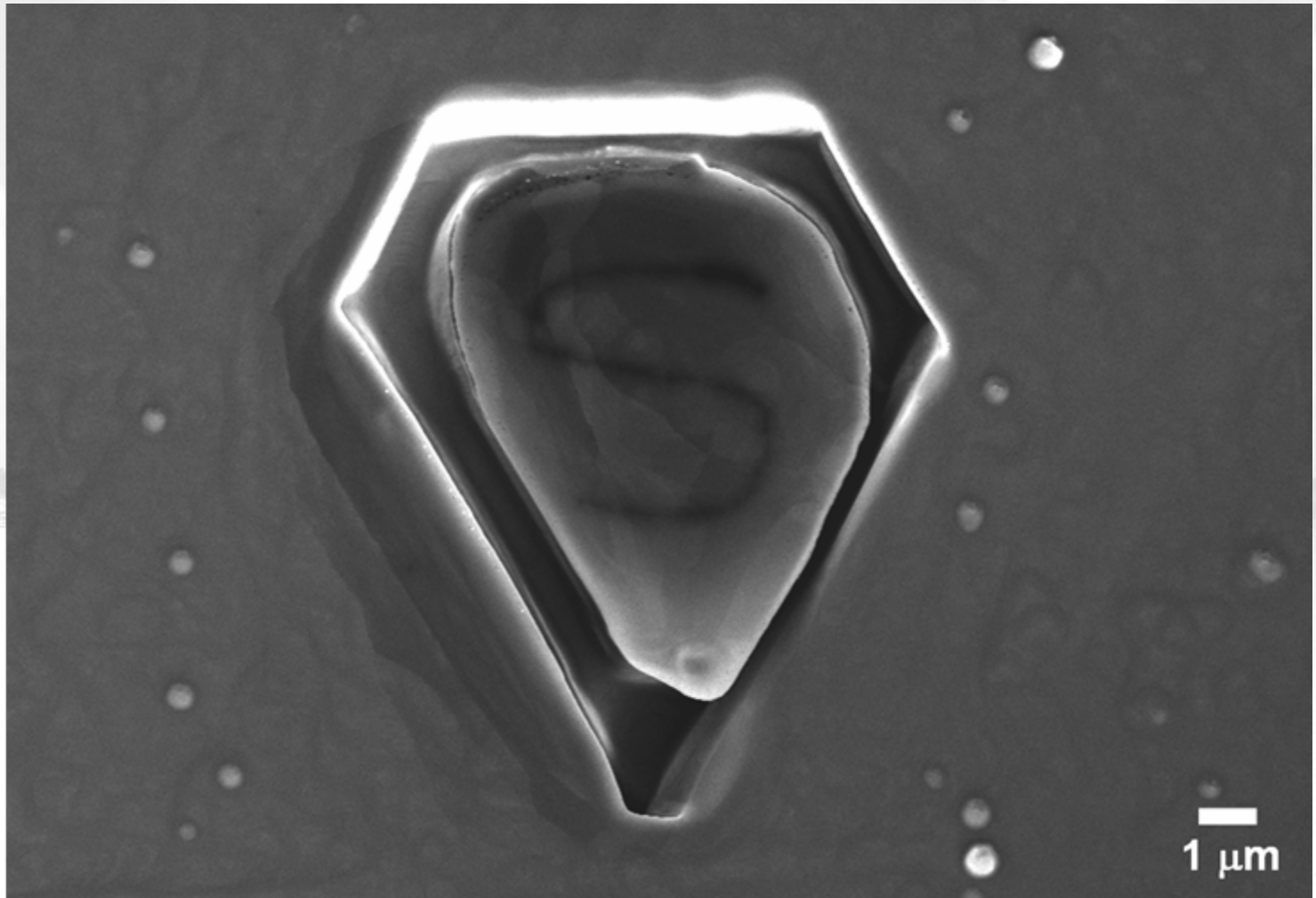


2009 EIPBN MicroGraph Contest

Micrograph Title:
Dissociation
Product upon
Adsorption of
Superman on
Cryptonite(111)

Description:

The "S" was
handwritten via
electron-beam
induced deposition
(EBID) on a structure
found by chance on
Au(111).



Magnification (3"x4" image): 5 KX

Instrument (Make and Model): Omicron/ZEISS UHV SEM

Submitted by: Michael Schirmer, Marie-Madeleine Walz and Hubertus Marbach

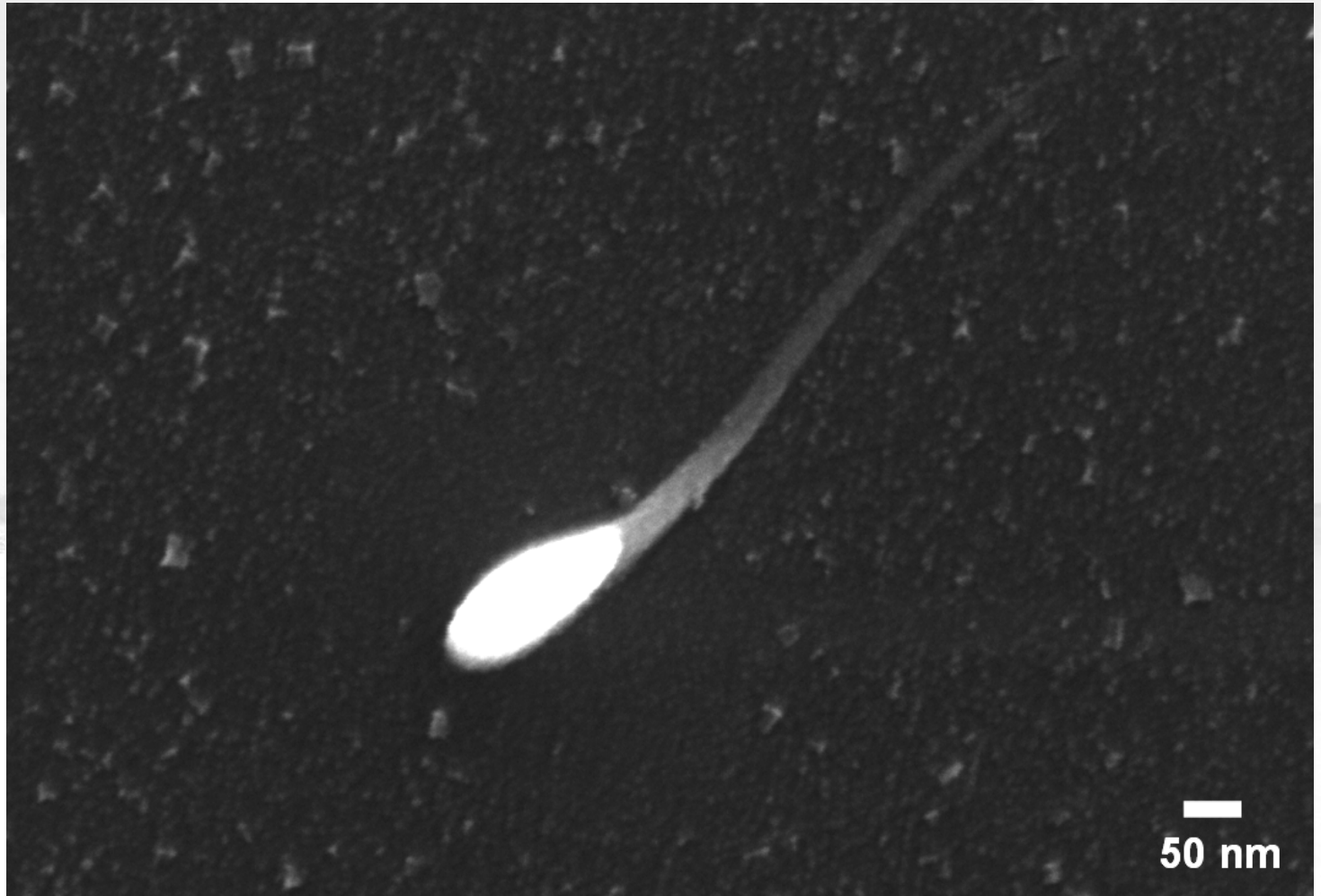
Affiliation: University Erlangen-Nuremberg, Germany



2009 EIPBN MicroGraph Contest

Micrograph Title:
"Fertilized
Silicon Oxide"

Description:
This happens when
the electron-beam
gets out of control
during EBID.



Magnification (3"x4" image): 100.00 KX **Instrument (Make and Model):** Omicron/ZEISS UHV SEM
Submitted by: Michael Schirmer, Marie-Madeleine Walz and Hubertus Marbach
Affiliation: University Erlangen-Nuremberg, Germany

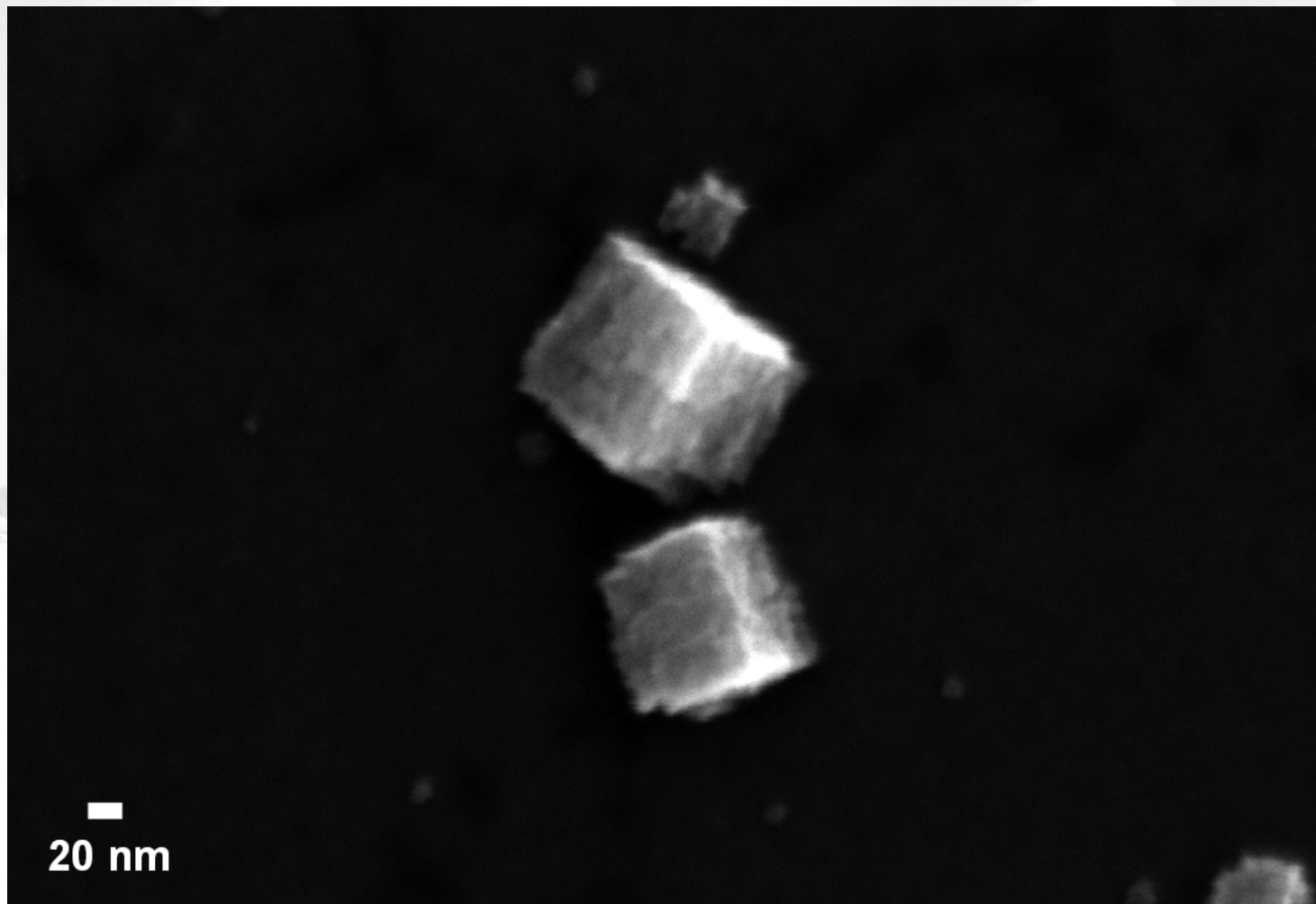


2009 EIPBN MicroGraph Contest

Micrograph Title:
“...and He does
play dice!”

Description:

Iron cubes on SiO_x
generated by
focused electron-
beam induced
processing with iron
pentacarbonyl.



Magnification (3"x4" image): 100.00 KX

Instrument (Make and Model): Omicron/ZEISS UHV SEM

Submitted by: Michael Schirmer, Marie-Madeleine Walz and Hubertus Marbach

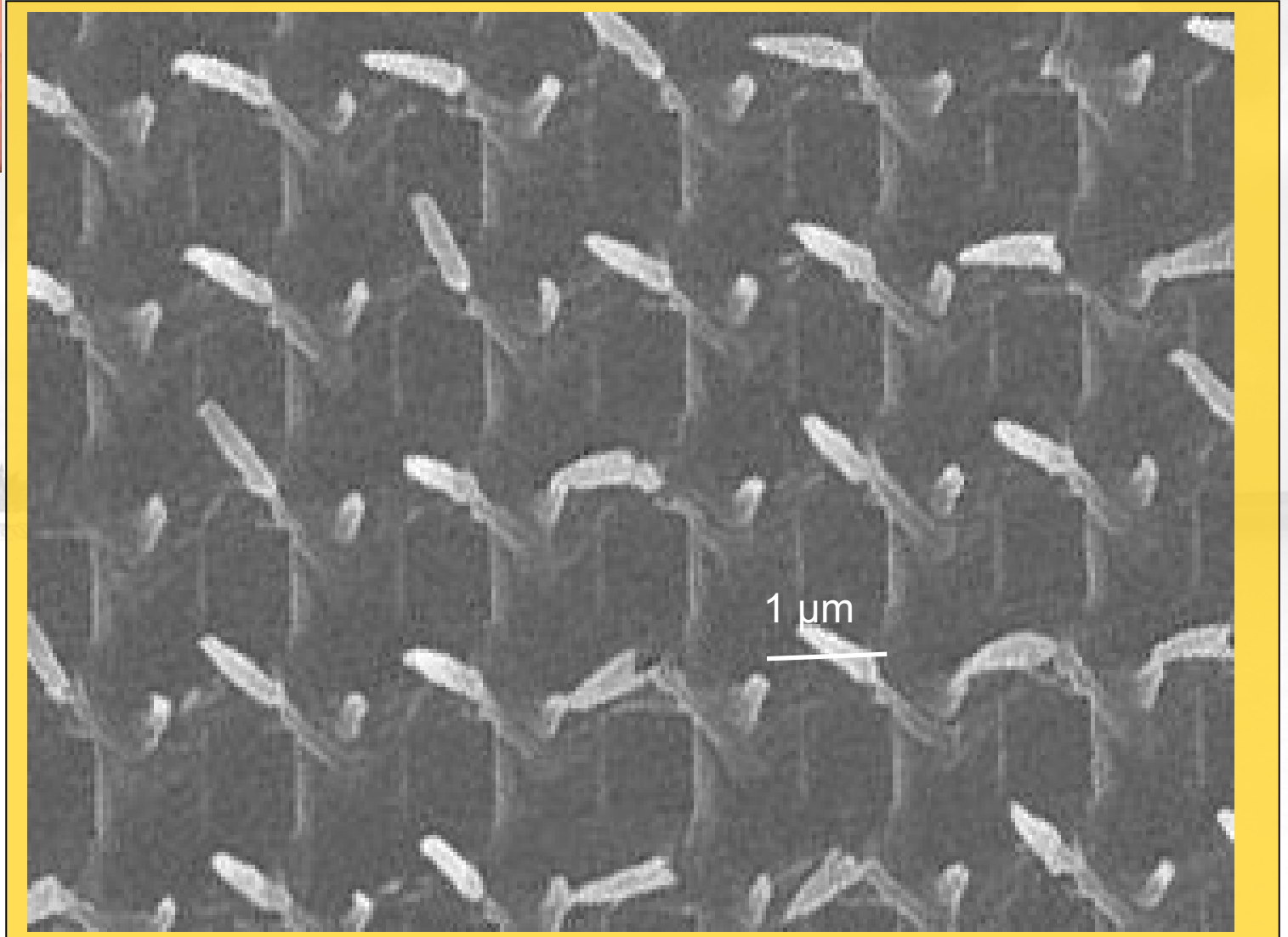
Affiliation: University Erlangen-Nuremberg, Germany



2009 EIPBN MicroGraph Contest

**Micrograph
Title: Holy
cross**

**Description:
Imprint SBS
copolymer film
with a 1- μ m-
period pillar mold**

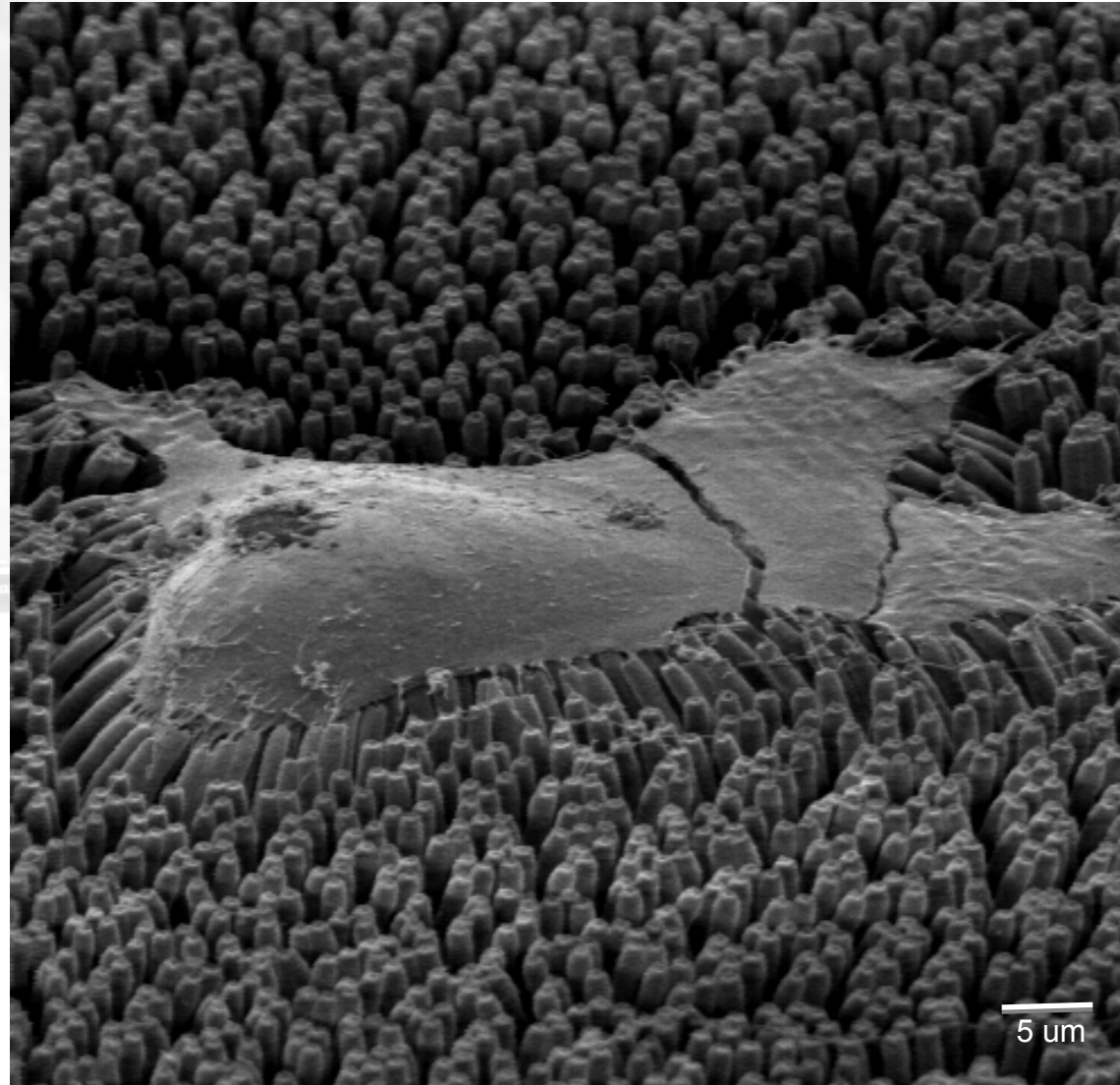


**Magnification (3"x4" image): 18KX
Submitted by: Ying Wang**

**Instrument (Make and Model): LEO 1550 SEM
Affiliation: Nanostructure Lab, Princeton Univ.**



2009 EIPBN MicroGraph Contest



Micrograph
Title: Gulliver
in Lilliput

Description: A 3T3 cell
attached to an array of
PDMS pillars. The cell on
the substrate is critical
point dried and gold-
coated for SEM imaging.

Magnification (3"x4" image):
Submitted by: Saba Ghassemi

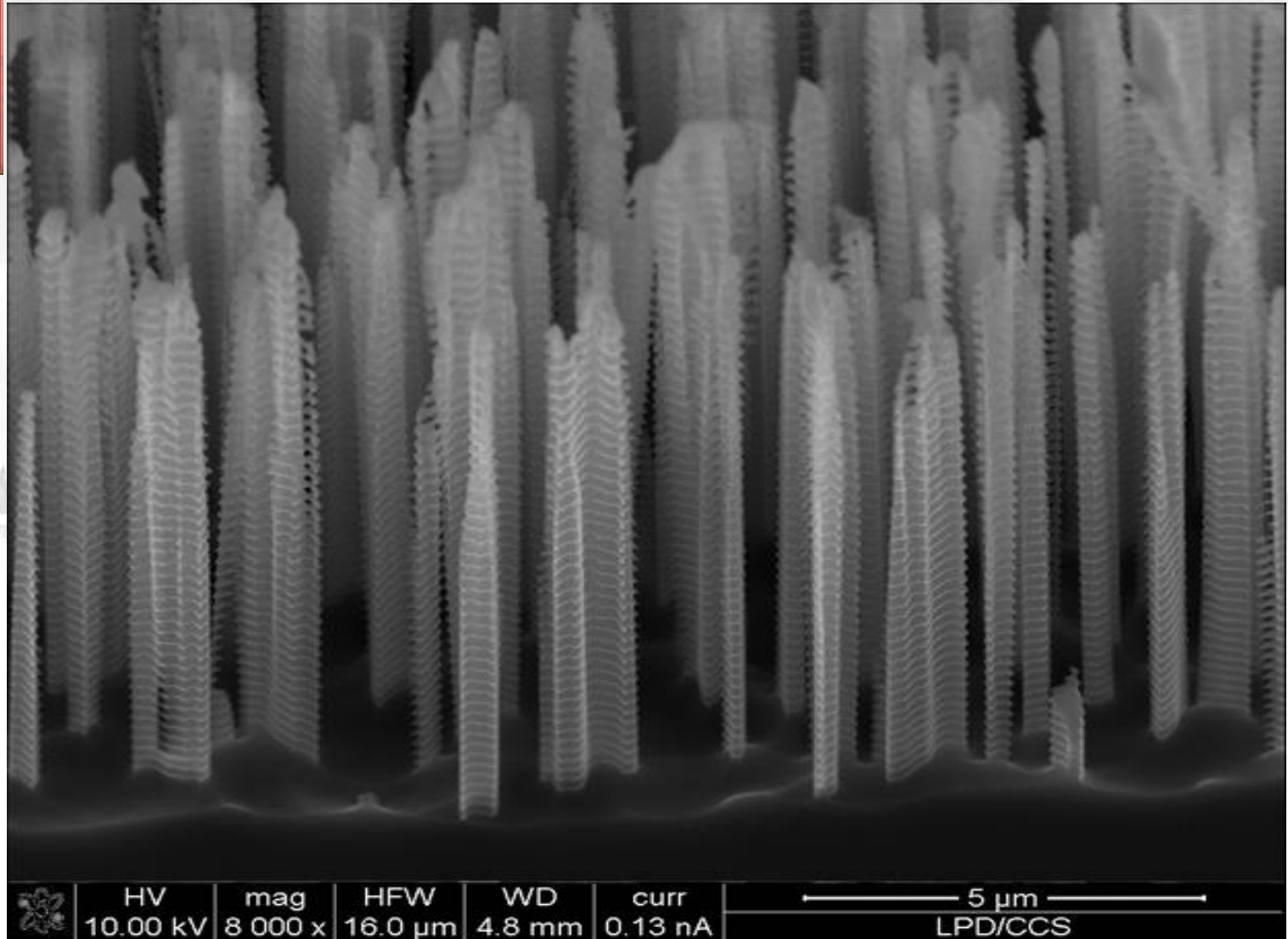
Instrument (Make and Model): Hitachi 800 SEM
Affiliation: Columbia University



2009 EIPBN MicroGraph Contest

**Micrograph
Title: Silicon
Nanocity**

**Description:
SEM images
of silicon
pillar forming
the black-
silicon
obtained by
plasma
etching**



Magnification (3"x4" image): 8000x

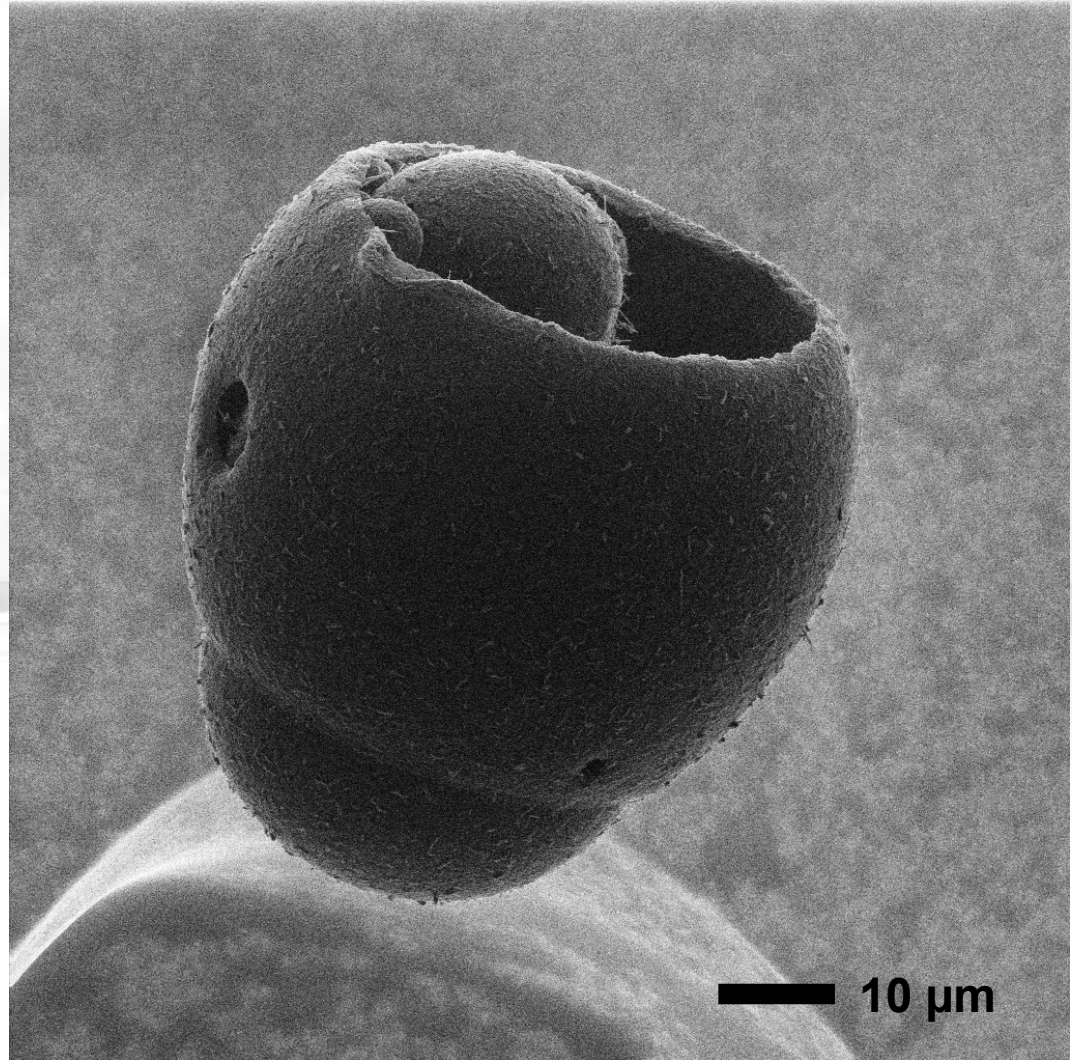
Instrument (Make and Model): FEI DB Nova 200

Submitted by: Alfredo Rodrigues Vaz e Clovis Fischer

Affiliation: LPD/CCS – UNICAMP - BRAZIL



2009 EIPBN MicroGraph Contest



Micrograph Title:
Docking to the
Mother Ship

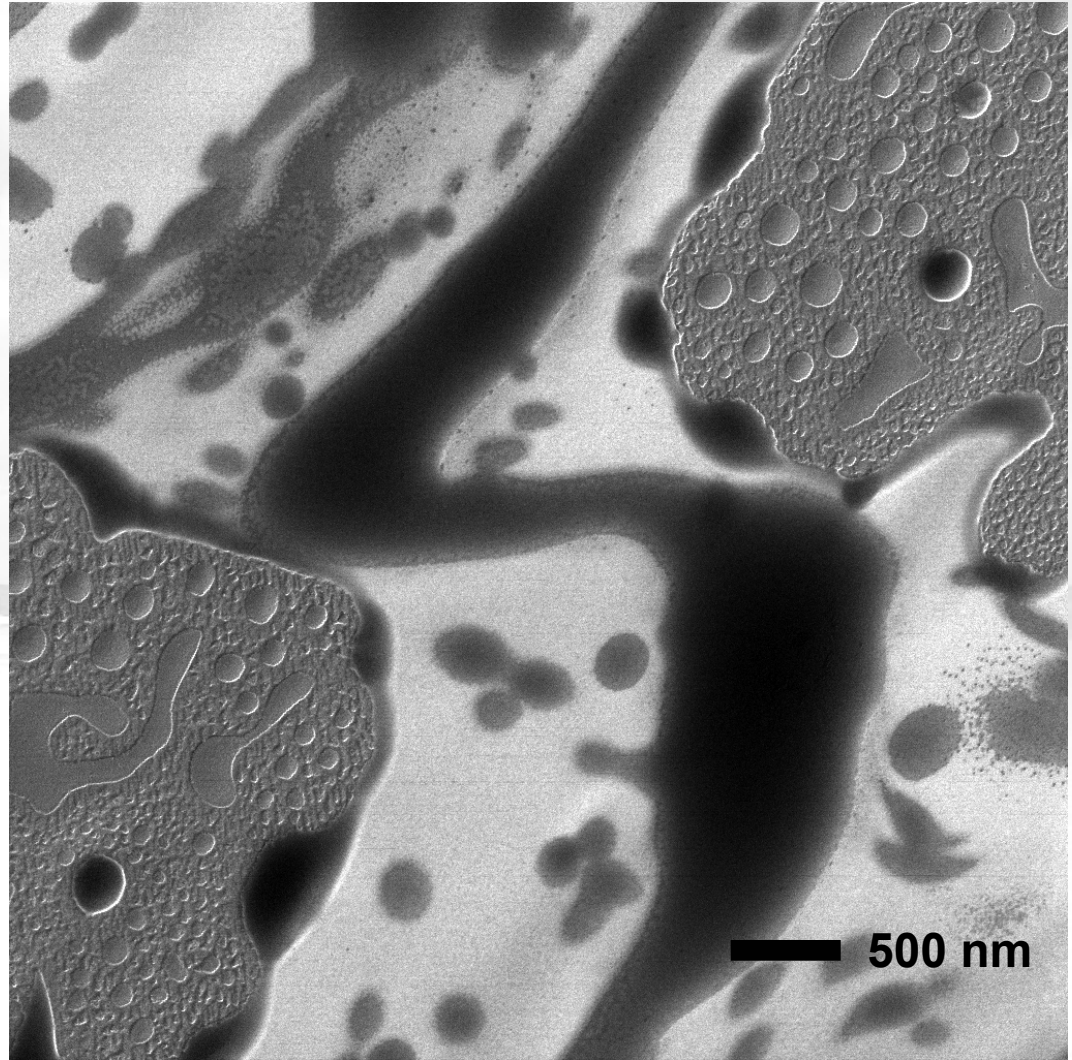
Description:
Chromatography bead
mysteriously hovering
above its substrate

Magnification (3"x4" image): 1000X
Submitted by: Larry Scipioni

Instrument (Make and Model): Carl Zeiss Orion Plus
Affiliation: Carl Zeiss SMT, Inc.



2009 EIPBN MicroGraph Contest



Micrograph Title:
Lava River on Titan

Description:
Joint of a spot weld
in tungsten

Magnification (3"x4" image): 20kX
Submitted by: Larry Scipioni

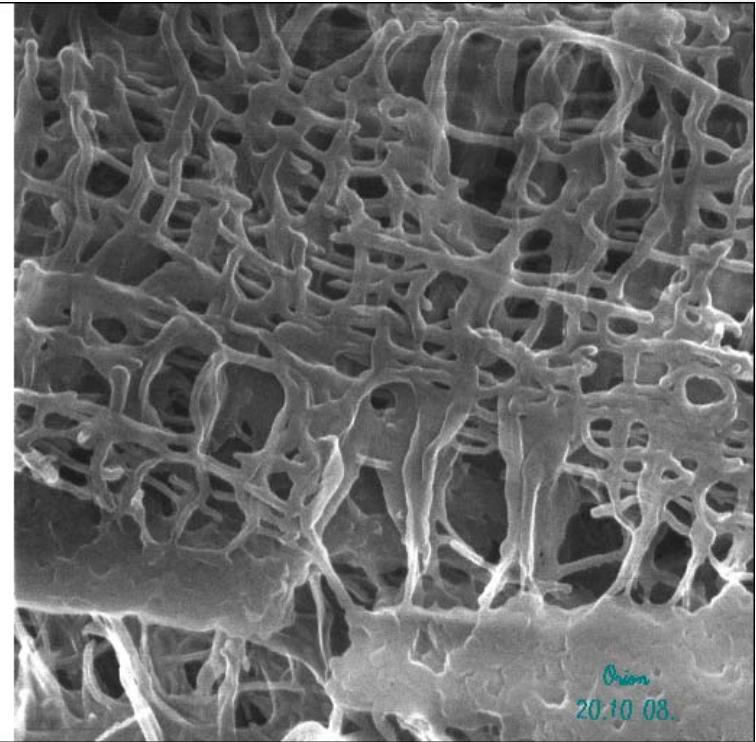
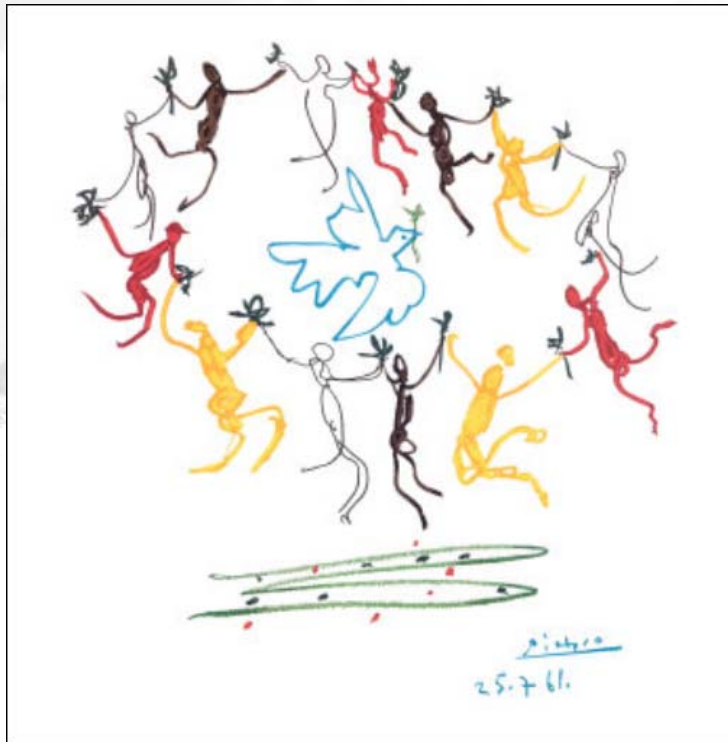
Instrument (Make and Model): Carl Zeiss Orion Plus
Affiliation: Carl Zeiss SMT, Inc.



2009 EIPBN MicroGraph Contest

Micrograph Title:
The Dance of Youth

Description:
Polymer network



500 nm

Magnification (3"x4" image): 60kX
Submitted by: Larry Scipioni

Instrument (Make and Model): Carl Zeiss Orion Plus
Affiliation: Carl Zeiss SMT, Inc.



2009 EIPBN MicroGraph Contest

**Micrograph
Title:**
The bloom of
laser-beam
lithography

Description:
Optical
micrograph of
the culet of a
brilliant-cut
diamond that
is covered with
developed
positive
photoresist
sporting the
pattern of a
future pick-up
coil



Magnification (3"x4" image):
Submitted by: A. Imre & M. Abliz

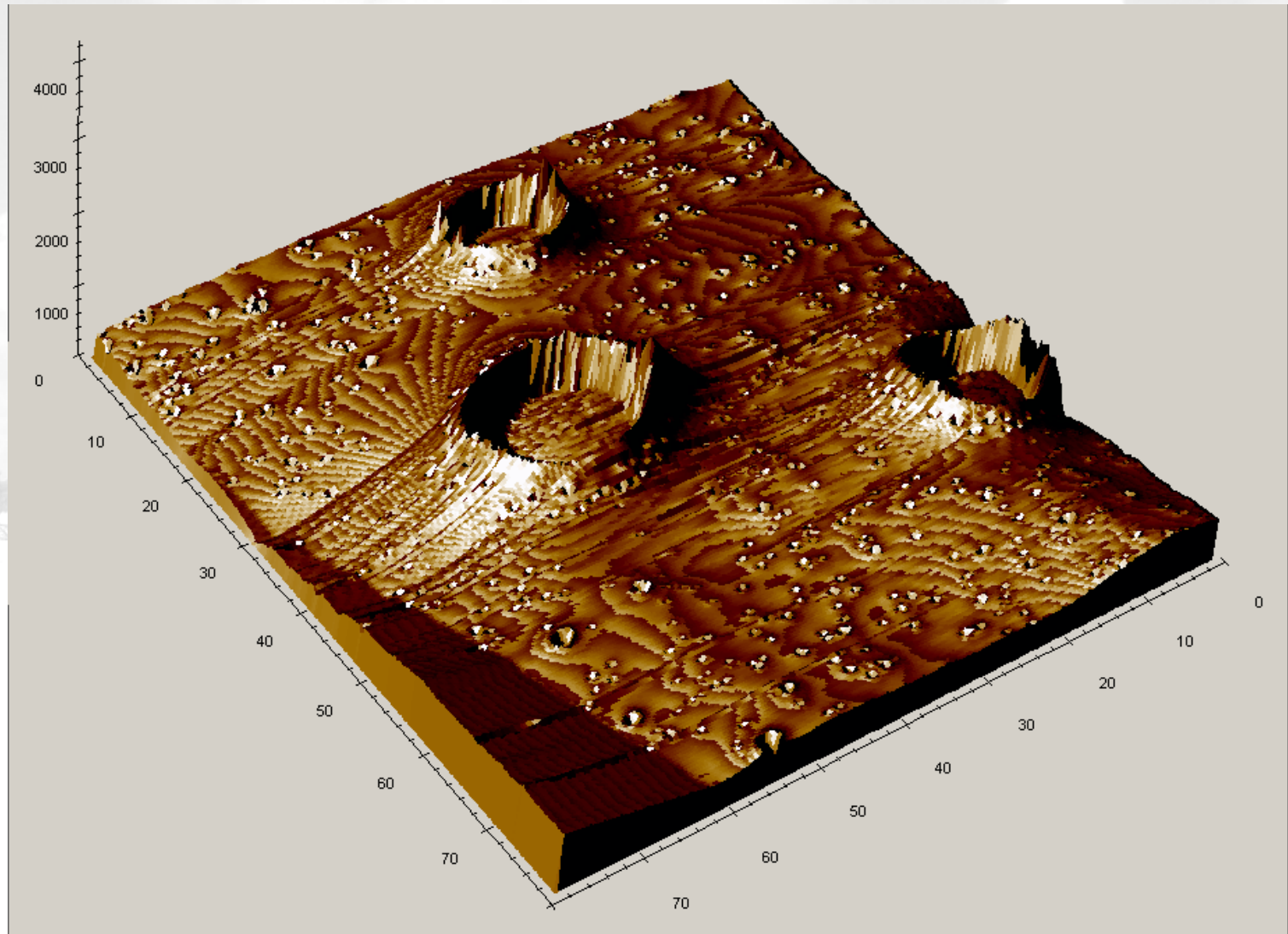
Instrument (Make and Model): Olympus MX-61
Affiliation: Center for Nanoscale Materials, ANL



2009 EIPBN MicroGraph Contest

**Micrograph
Title:**
Surface of
Mars

Description:
The surface
morphology of a
photoresist after
spin-coating.



Magnification (3"x4" image): 900X
Submitted by: Richard Lawson

Instrument (Make and Model): Agilent 5500 AFM
Affiliation: Georgia Institute of Technology



2009 EIPBN MicroGraph Contest

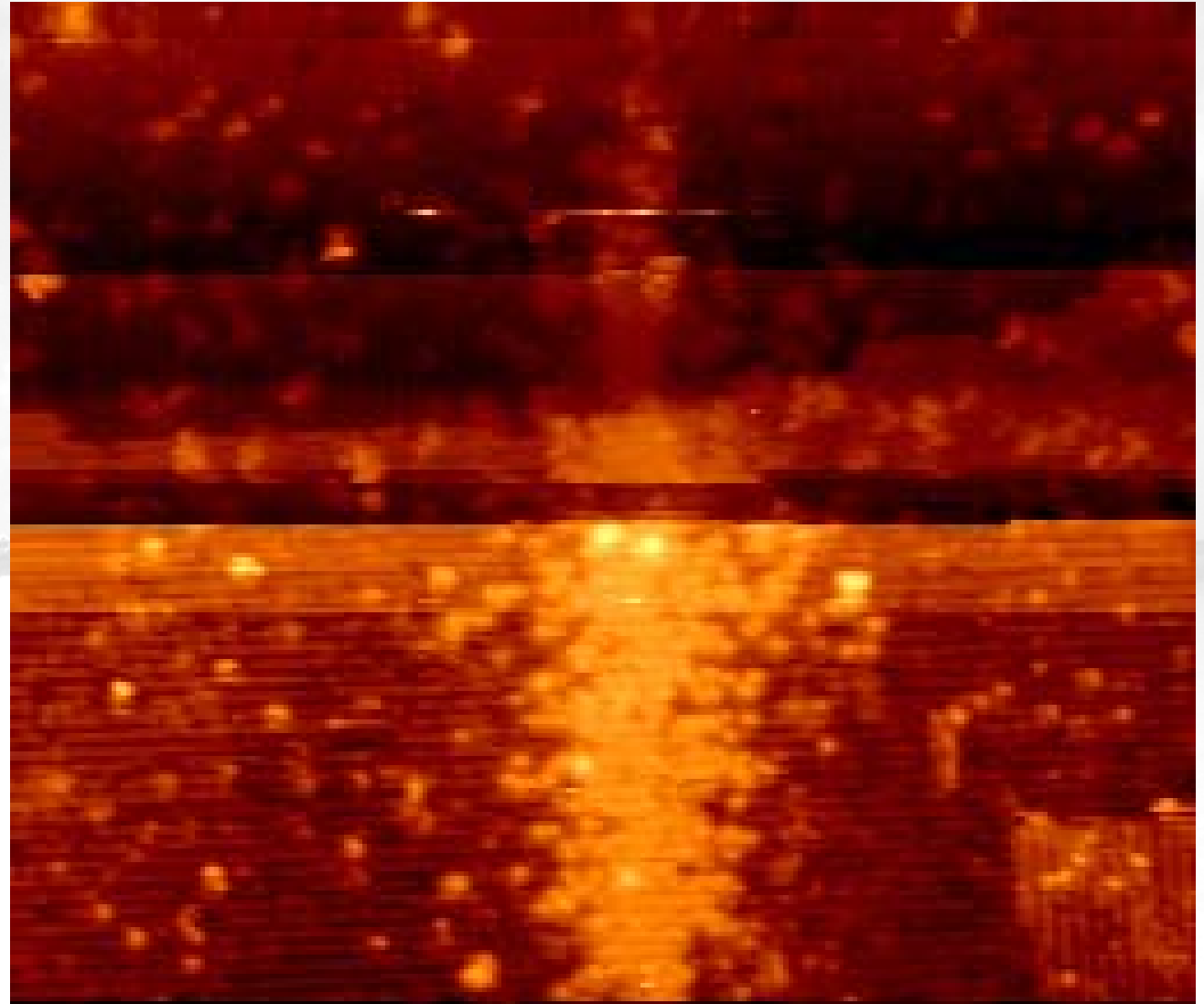
Micrograph

Title:

**Starboard
Sunset**

Description:

Si(100) 2x1 surface with most of the surface passivated by hydrogen except for the bright area in the middle which is a nanolithographic feature consisting of de-passivated silicon. The horizontal features are dimer rows of Si atoms.

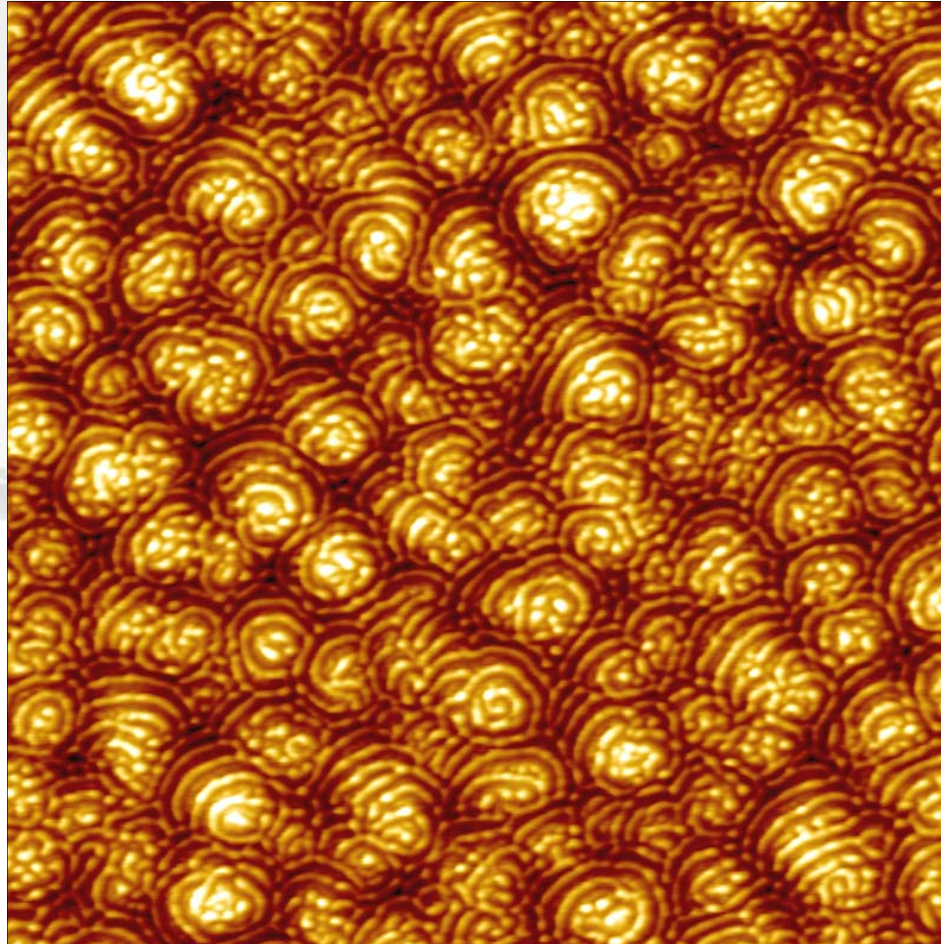


Magnification (3"x4" image): 2,000,000x
Submitted by: Josh Ballard

Instrument (Make and Model): Zyvex DAZE – 2009 STM
Affiliation: Zyvex Labs



2009 EIPBN MicroGraph Contest



Micrograph Title:

snail-shell cemetery

Description:

Self-organized nanostructures on a Ge surface induced by low-energy ion beam erosion. AFM image: 4 μm x 4 μm , z-scale 16 nm

Magnification (3"x4" image): 25 kx

Submitted by: J. Völlner, B. Ziberi
F. Frost

Instrument: MFD-3D AFM, Asylum Research

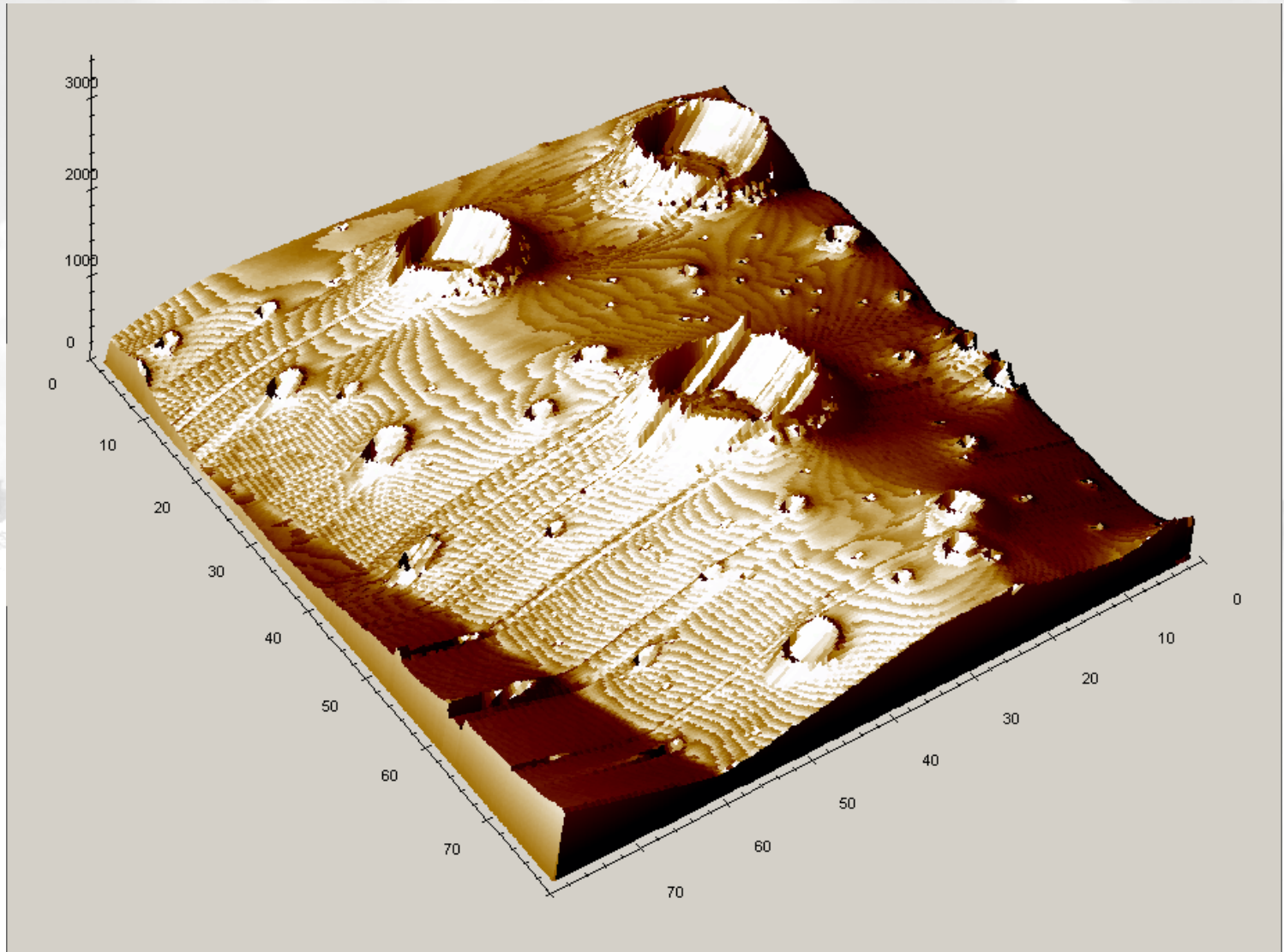
Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



2009 EIPBN MicroGraph Contest

Micrograph Title:
Surface of the Moon at Dawn

Description:
The surface morphology of a photoresist after spin-coating.



Magnification (3"x4" image): 900X
Submitted by: Richard Lawson

Instrument (Make and Model): Agilent 5500 AFM
Affiliation: Georgia Institute of Technology



2009 EIPBN MicroGraph Contest



Micrograph Title:

dots or lines?

Description:

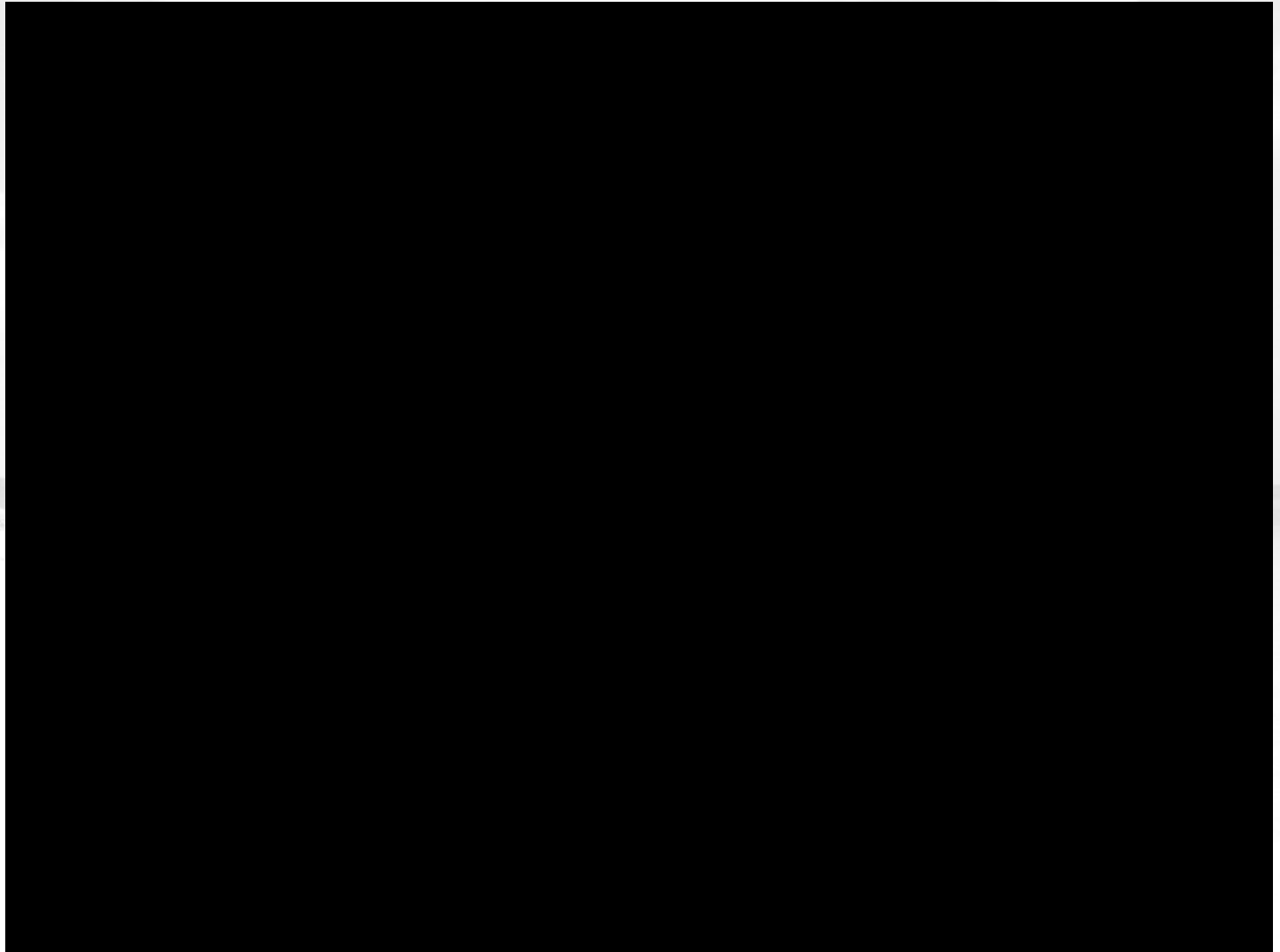
Self-organized
nanostructures on a Si
surface induced by low-
energy ion beam erosion
AFM image: 2 μm x 2 μm ,
z-scale 3 nm

Magnification (3"x4" image): 50 kx
Submitted by: J. Völlner, B. Ziberi
F. Frost

Instrument: MFD-3D AFM, Asylum Research
Affiliation: Leibniz-Institute of Surface Modification,
Leipzig, Germany



2009 EIPBN MicroGraph Contest



Micrograph Title:
IBID micro bridge

Description:
Live video (SEM imaging) of a micron-scale bridge being fabricated with a Ga⁺ ion beam in a dual-beam instrument by ion-beam-induced deposition (IBID) using a platinum precursor gas.

Magnification (3"x4" image): 25,000 X
Submitted by: Aurelien Botman

Instrument (Make and Model): FEI Quanta 3D FEG
Affiliation: Technische Universiteit Delft (Netherlands)