Tel Aviv University Center for Nanoscience and Nanotechnology

NEWSLETTER

Equipment upgrade at the center

New Characterization systems

As a result of extensive market research conducted by three professional committees during the past year, the Nanocenter academic committee has decided to pursue the following systems from the supplier ThermoFisher: ESCALAB 2 Chambers, Apreo 2 S LoVac, Talos F200i and Spectra 200.
We anticipate that the negotiation for capital and services will close by the end of 2021.

### Nanotechnology community can now access Helios 5 (dual beam FIB and SEM) for various applications.

Currently available applications:
- Cross Section - obtaining SEM images and EDS measurements of a cross section cut out of the sample.
- Ion beam imaging emphasizing channeling and grain boundary contrast.
- Patterning - A pattern can be designed from a GDS file or a greyscale BMP image using the built-in software. So far, silicon sputtering yields have been well defined by the machine's software. Therefore, depths must be calibrated in advance for every material except silicon.
- TEM Lamella Preparation – will be available soon.

Future applications:
- 3D tomography and reconstruction
- VLSI chips failure analysis
- Ion-beam lithography

To coordinate service please contact Roy Davidi
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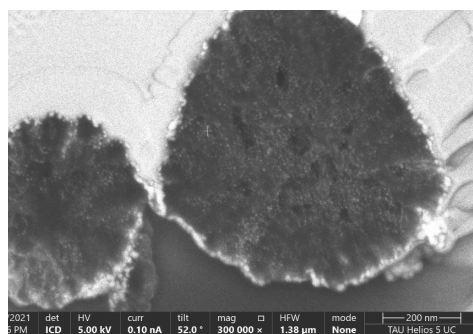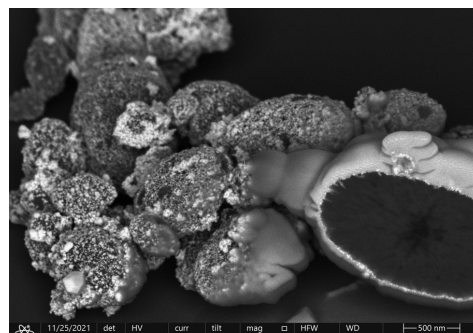
Cross sectional view of porous micron/submicron Vaterite particles filled with Gold nanoparticles. The particles were acquired from Dr. Pavel Ginzburgs's lab and synthesized by Dr. Roman Noskov and Andrey Machnev. Cross sectional view was done on Helios 5 machine by Dr. Gal Radovsky and Roy Davidi.

Our ALD (atomic layer deposition) BENEQ system recently underwent major maintenance to improve the process environment and eliminate defects.

The system has advanced capabilities and can deposit a variety of layers such as Al_2O_3, TiO_2, Ta_2O_5, TiN, TaN, AlN. It is supplied by gas lines of Ar, O_2, NH_3, H_2, N_2; liquid sources of $TiCl_4$, TMA, H_2O, $DEZn$ and hot source of $TaCl_5$ with additional hot source to be decided.

NANO.IL.2021 Conference

Tel-Aviv University Center for Nano Science and Nanotechnology exhibited at the NANO.IL.2021 conference in Jerusalem last month and enjoyed being a part of the event.
The Conference brought together Science, Technology and Business opportunities. This year the focus was on moving from development to commercial application and 3D field.
The conference provided an opportunity to observe innovations, create business opportunities and present Israeli research and development.
Tel Aviv University Nanocenter presented its advanced capabilities of fabrication and characterization, providing the research community and Israeli industry to conduct cutting edge technologies .
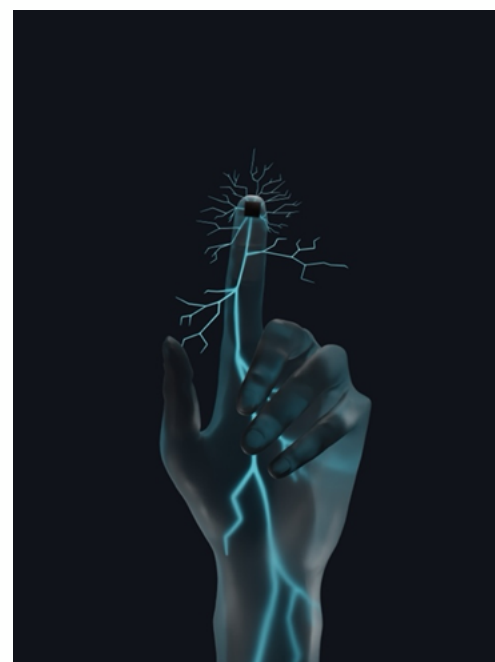The Nanocenter team at TAU looks forward to future collaborations and similar events.

Nanotechnology Research

Restoring Tactile Sensation Using a Triboelectric Nanogenerator

Researchers from TAU's Department of Biomedical Engineering and Sagol School of Neuroscience, Led By Dr. Ben M. Maoz, have developed a device which can be implanted under the skin and restore tactile sensation. The device produces charge which is proportional to the pressure applied on it, and it is transduced to an active sensory nerve. The device is self-powered by using the triboelectric effect. Overall, the device allows to by pass damage nerves and to restore tactile sensation without the need for external power source.

https://pubs.acs.org/doi/abs/10.1021/acsnano.0c10141

Nano Community Upcoming Events

We are excited to announce that the 13th annual Fred Chaoul Meeting will be held on January 11-13 2022 at the Dead Sea. TAU professors will present a wide range of educational presentations in a variety of emerging and exciting disciplines.

We are encouraging all of you to join this fascinating event.

Nanocenter-affiliated researchers and students-Registration and accommodation are free!

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