

Nanotechnology and nanoApplication Workshop

February 5 - 6, 2020



Nanocenter

Center odličnosti nanoznanosti in nanotehnologije
Center of Excellence in Nanoscience and Nanotechnology

CO NANOCENTER - CENN

your partner in nanotechnology research

Martina Knavs, Project Office Manager
CENN, IJS



Strateško razvojno inovacijsko partnerstvo
TOVARNE PRIHODNOSTI



ARRS

SLOVENIAN RESEARCH AGENCY



European
Research
Council



Horizon 2020
European Union Funding
for Research & Innovation

Interreg



ITALIA-SLOVENIJA



NANO-REGION

Progetto strategico co-finanziato dal Fondo europeo di sviluppo regionale
Strateški projekt sofinanciran Evropski sklad za regionalni razvoj

Access to knowledge and facilities

Addressing the need
of industry,
research institutions
and universities



Infrastructure facility (nanoscience, new materials)

Synthesis of new
nanomaterials

Processing

Characterization

The screenshot shows the Nanocenter website homepage. At the top, there is a navigation bar with links for home, services, reservations, events, about us, news blog, and internal blog. A search bar and a 'Reservation system' button with flags for Slovakia and the UK are also present. Below the navigation is a main menu with categories: Synthesis of new nanomaterials, Processing, Characterization, Modelling, Equipment list, Video/Training, and FAQ. The main content area features a large image of a laboratory workstation with a microscope and a computer monitor. Below this image is a 'Highlights' section with three items: 'ASSESSMENT OF IMPACT' (with a video icon), 'PROMOTION AND TRAINING' (with a video icon), and 'Electron-beam lithography (video)' (with a video icon). To the right of the main content is a 'Latest News' sidebar with three entries: 'Applied Sciences publication' (with a video icon), 'New project - NANO-REGION' (with a video icon), and 'Two new publications' (with a video icon). At the bottom right, there is a Facebook widget for 'Nanocenter Slov...' showing 290 likes and a 'Liked' button.

home services reservations events about us news blog internal blog

Nanocenter

Reservation system

Synthesis of new nanomaterials Processing Characterization Modelling Equipment list Video/Training FAQ

Latest News

Applied Sciences publication

New publication in Applied Sciences: *The Importance of Topological Defects in Photoexcited Phase Transitions Including Memory Applications* by Dragan Mihailović

New project - NANO-REGION

CO Nanocenter is a partner in a new project NANO-REGION

Two new publications

Physical Review Letters: *Mottness collapse without metallization in the domain wall of the triangular-lattice Mott insulator 1T-TaS₂* and Physical Review B: *Time-resolved reflectivity and Raman studies of the interplay of electronic orders in Mo₅O₂₃*

Highlights

ASSESSMENT OF IMPACT

PROMOTION AND TRAINING

CENN promotion (video)

Electron-beam lithography (video)

Laser lithography (video)

Facebook

Nanocenter Slov...
290 likes

Liked

You and 3 other friends like this

Synthesis of new nanomaterials

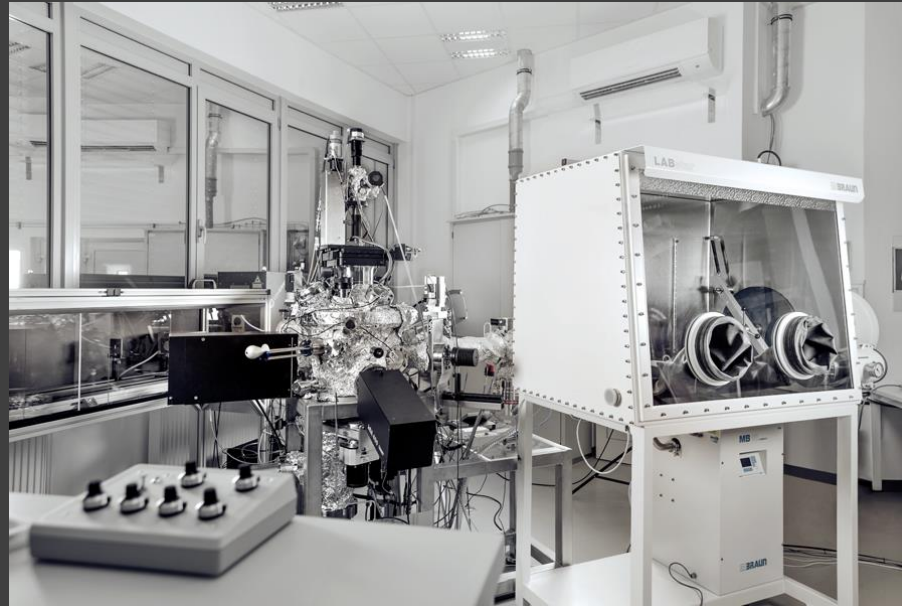
especially important for ultimate industrial applications. New materials, discovered and synthesised can be the basis of new technologies and products, which gives users a competitive advantage

PLD – Pulse Laser Deposition

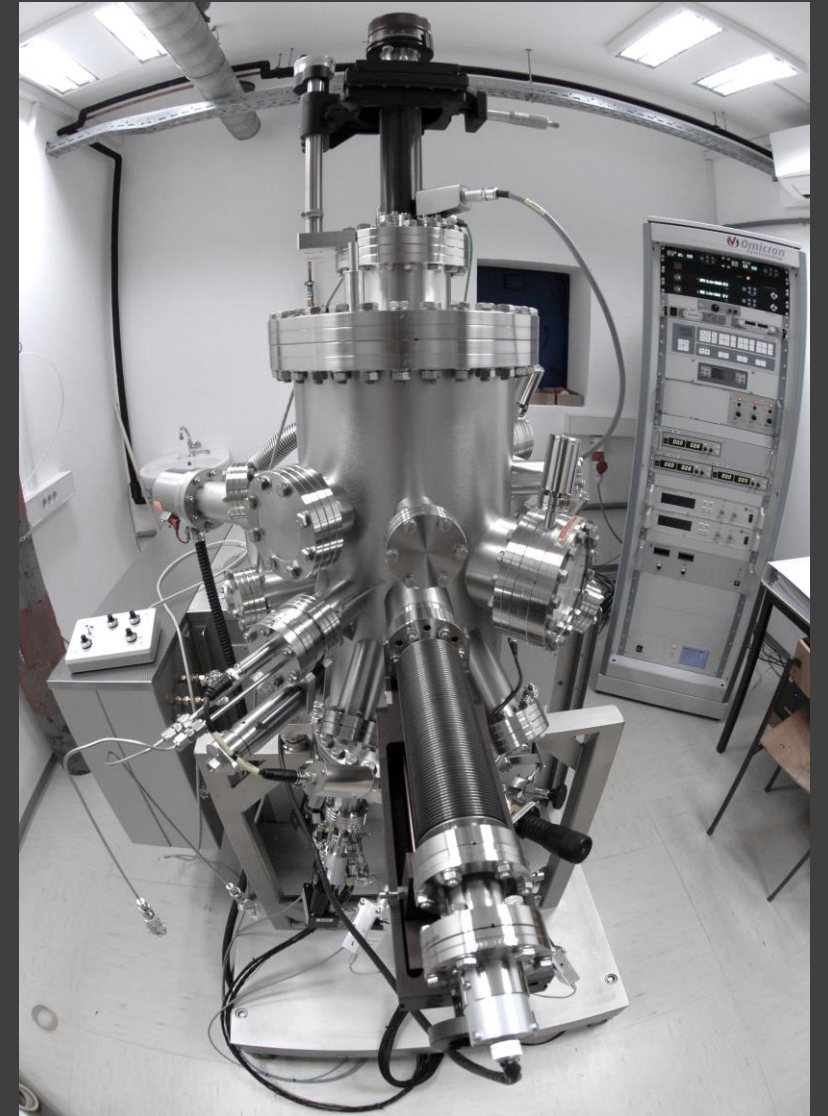
a technique for thin-film growth of inorganic materials mainly

MBE – Molecular Beam Epitaxy

precise deposition method for single crystal thin film growth



Complex oxides on SrTiO₃/SiO₂/Si



TaS₂, MoS₂, etc.

Processing:

Nanofabrication technologies

DaLI direct Laser Lithography System

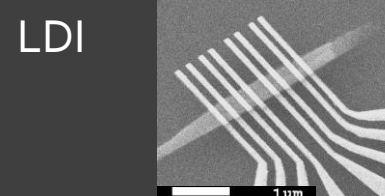
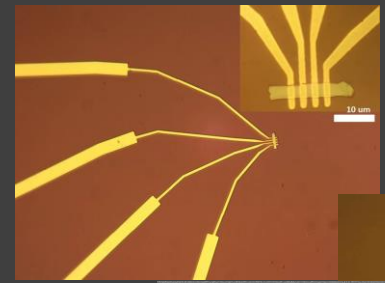
an universal, high-resolution, table top laser direct imaging (LDI) system for prototyping on resist-covered substrates

ALD – Atomic Layer Deposition

for the application of different atomic layers, accelerate significantly the final prototyping, allow the functionalization of nanomaterials and thin nanostructured layers

FIB – Focused Ion Beam

a technique used in the semiconductor industry, materials science and in the biology field for site-specific analysis, deposition and ablation of materials using accelerated ions

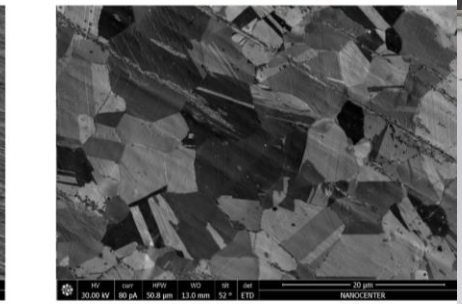
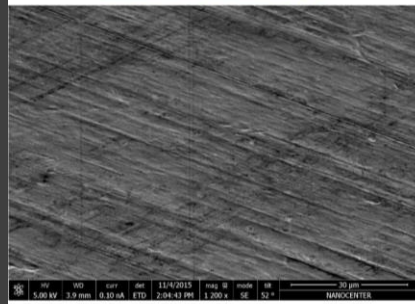


ALD



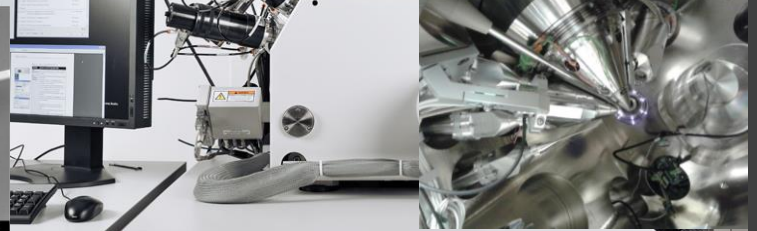
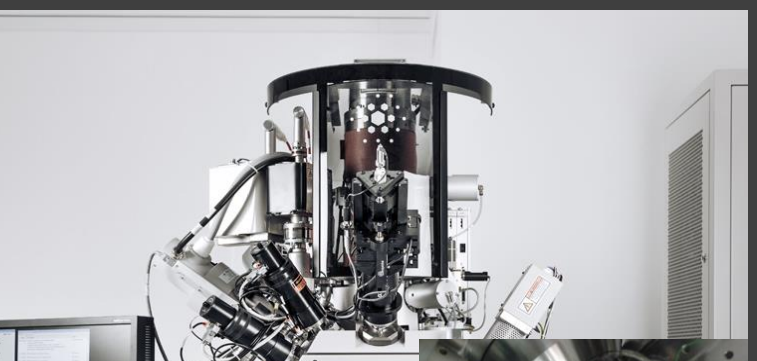
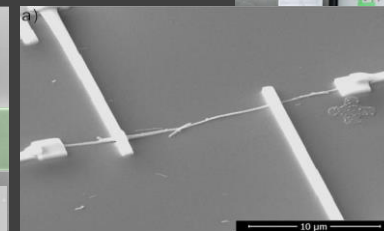
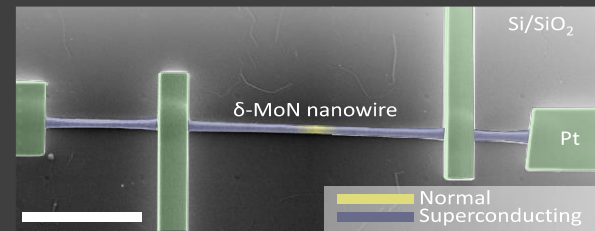
Electrone beam image

Ion beam image



5 kV @ 0.10nA, SE

30 kV @ 80 pA, SE



Characterization

the core of all progress in nanotechnology

Magnetometer

NMR STM

LT STM

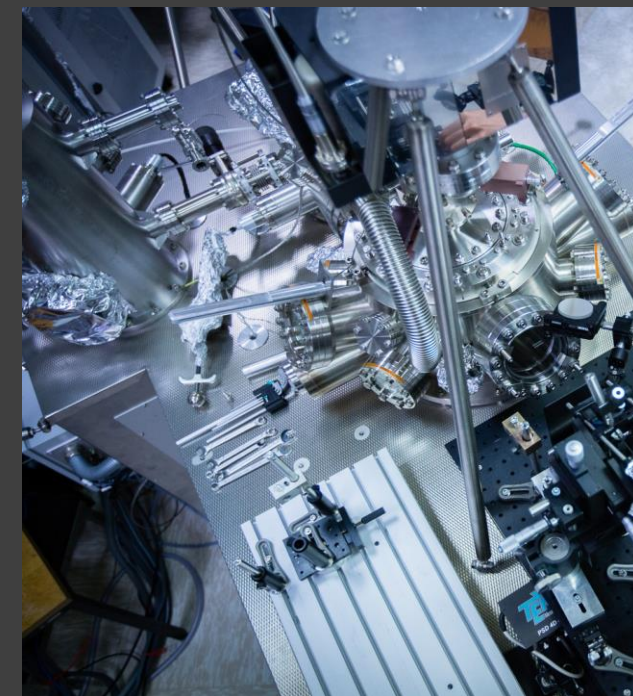
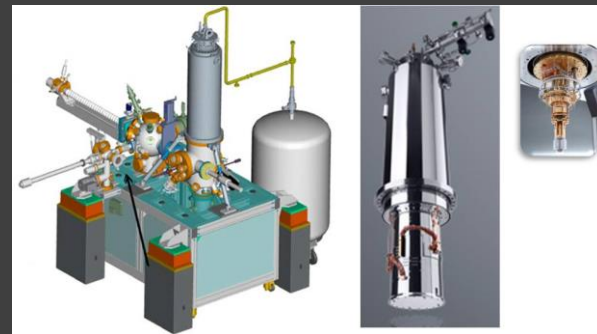
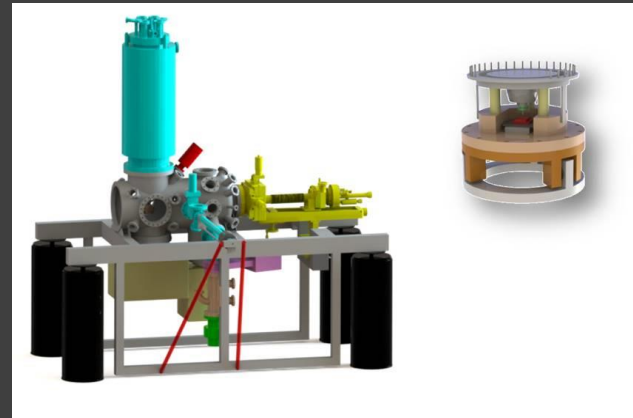
Raman microscope AFM

Confocal microscope

Elipsometer

4-Probe STM UHV

X-ray diffractometer





Jozef Stefan Institute and IPS, CENN Nanocenter and Univ. of Ljubljana, SLOVENIA

Highlights

Research Projects

Ministry of Science, ERD
Funds, National Research
Agency, FP7, H2020, ERC,
NFFA

Project with Industry

access to the equipment,
interaction of sectors

Promoting Open Access infrastructure

in dialog with users and
policy makers

Creating a network

CENN hosts over 100 users from industry, universities and research institutes annually

Stairway to Excellence, S2E, 2016

CENN was chosen as an example of good practice in combining European Structural and Investment Funds and FP7/ H2020 funds in order to amplify the R&I investments and their impact

Slovenian Smart Specialization Strategy – S4

CENN was successfully coordinating initiative for adopting Nanotechnology and Photonics as KETs into S4

Strategic Research and Innovation Partnership – SRIP

CENN is co-coordinating Horizontal Network Nanotechnologies in SRIP
Factories of the Future

Further information and details:

<http://www.nanocenter.si/>