
2018 IEEE 8th International Conference on
Nanomaterials: Applications and Properties
IEEE
NANOmaterials:
Applications &
Properties-2018
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Sept., 9-14, 2018, Zatoka, Odesa region, Ukraine

NAP-2018

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NAP-2018

Conference Chairs

Alexander Pogrebnjak (Ukraine) **Valentyn Novosad** (USA)

Topics

1. Synthesis and Properties of Nanomaterials
2. Carbon-based and other 2D materials
3. Photonics & Nanomaterials
4. Trends in Spintronics and Spin-related Phenomena at Nanoscale
5. Thin Films, Nanostructured Materials and Coatings
6. Nanomaterials for Clean Energy and Environment
7. Nanotechnology and Nanomaterials for Life Sciences
8. Miscellaneous and Interdisciplinary Topics

NAP-2018

Reforming R@D Policy and innovation in Ukraine

Raising money for research in USA

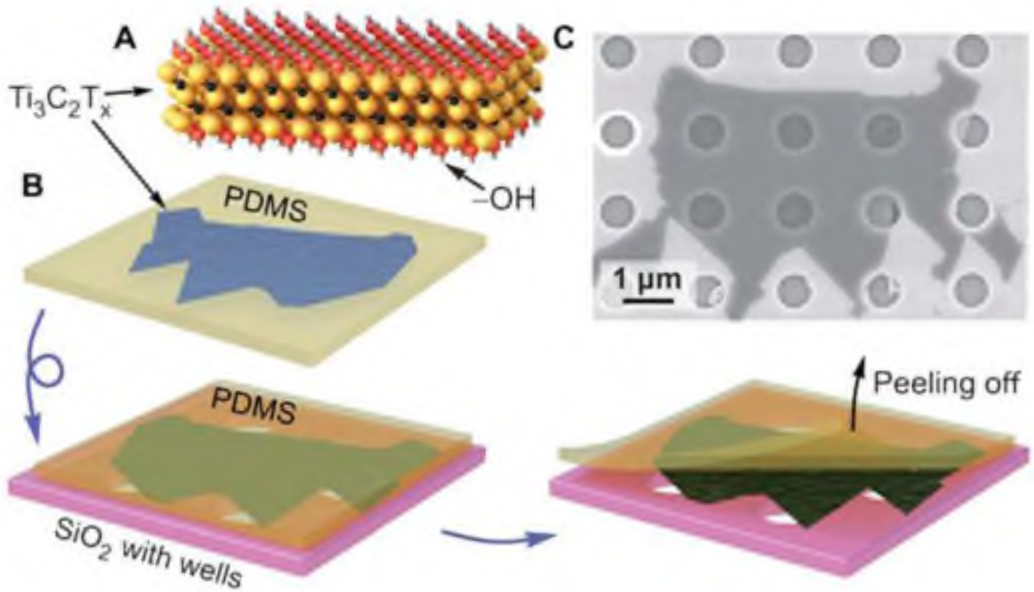
2D materials

Yury Gogotsi is the director of the A.J. Drexel Nanomaterials Institute and leads research in the Nanomaterials Research Group in the College of Engineering.

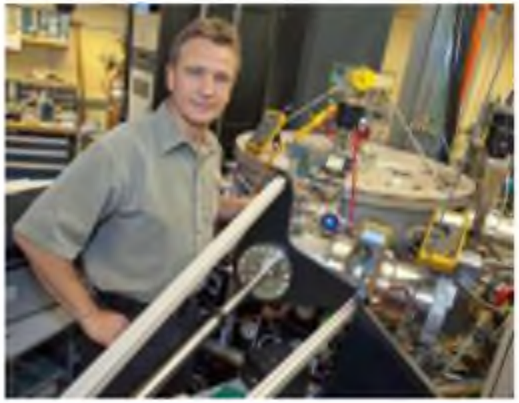
Drexel is a comprehensive global research university ranked among the top 100 in the nation. With over 24,000 students, Drexel is one of America's 15 largest private universities. Founded in 1891 in Philadelphia

MXenes

Since the discovery of a large new family of two-dimensional materials by Drexel University researchers in 2011, continued exploration has revealed their exceptional ability to store energy, block electromagnetic interference, purify water and even ward off bacteria. And, as recent research now suggests, MXenes are also very durable — the strongest material of its kind, according to a new study in the journal Science Advances.



Thin Films@Coating



André Anders
Director, Leibniz Institute of Surface Engineering (IOM), and
Professor of Applied Physics, Leipzig University
Leipzig, Saxony, Germany
Since July 2014, he is the Editor-in-Chief for Journal of Applied Physics, published by AIP Publishing.

Thin films are often synthesized using a flux of metals atoms stemming from evaporation or sputtering sources. Since the 1960s it is known that the microstructure of films and coatings can be engineered with energetic particles from plasma or ion sources. Here, sources of gas, metal, and mixed species are relevant. Depending on the energy and fluxes desired, one generally distinguishes plasma sources (without special ion acceleration means) and ion sources (having an ion acceleration stage such as a three-grid extractor system). Prominent modern sources of metal plasma include various forms of ionized sputtering, most importantly high power impulse magnetron sputtering (HiPIMS), which has especially gained interest in reactive HiPIMS [1]. Additionally, unfiltered and filtered arc plasma [2] are lesser known but important and educational, however, are quite different. In this brief overview I will show various energy and charge state distributions of plasma and ion beam tools, their applications, and include a discussion of benefits and shortcomings.

SYNTHESIS@PROPERTIES

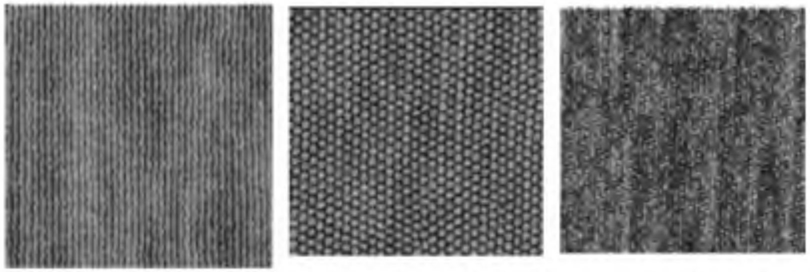
Denise Erb
Institute of Ion Beam Physics and Materials Research
Helmholtz-Zentrum Dresden-Rossendorf
Dresden, Saxony, Germany

Nanostructure arrays via templated growth: Fabrication methods and physical properties

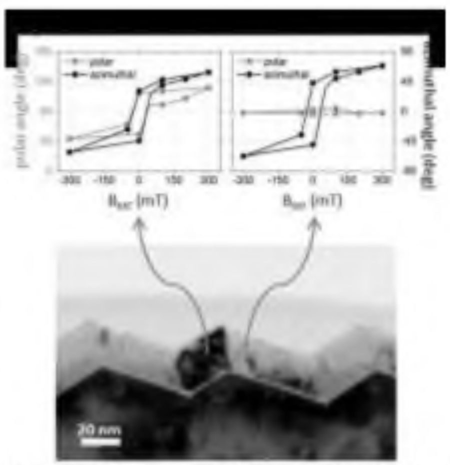
Nanostructured materials have the potential to make substantial contributions to solving our society's present challenges, e.g. in the fields of medicine, information technology, or energy harvesting from renewable sources. The possibility to fabricate them at industrially relevant scales will maximize the impact of such materials.
We present bottom-up nanopatterning approaches which promise easy implementation and scale-up by combining well-established techniques and effects:
(a) spontaneous nanopatterning of crystalline surfaces upon heating,
(b) suface nanopatterning induced by low-energy ion irradiation,
(c) diblock copolymer self-assembly
(d) physical vapor deposition with selective wetting,
(e) physical vapor deposition with geometrical sha-ding.

Denise Jennifer Erb

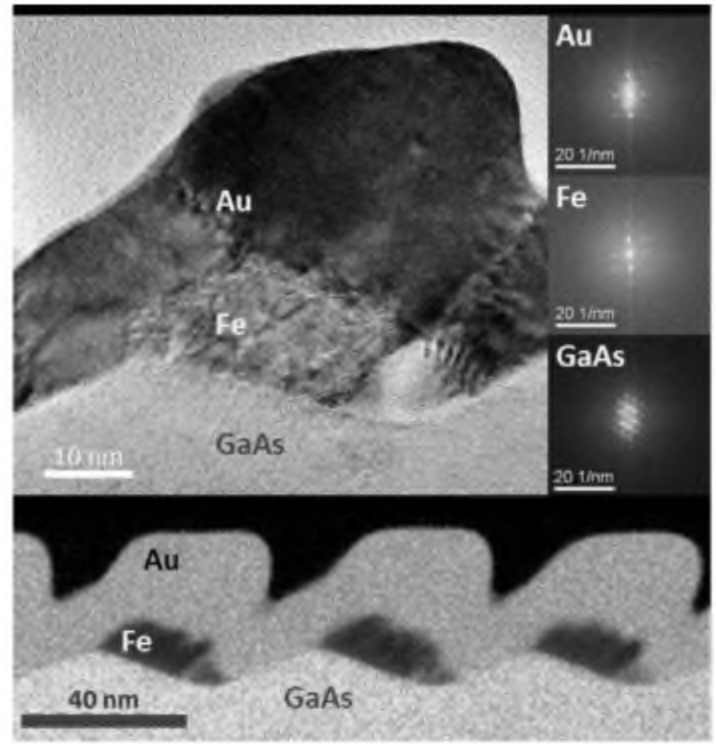
Combinations of these techniques and effects can result in highly regular nanostructure arrays of various morphologies and are applicable to a wide range of materials. The versatility of these approaches enables creative research and may lead to beneficial applications in diverse fields, ranging from optics and magnetism to catalysis



Atomic force microscopy of metal nanostructure patterns, via combination (a) + (c) + (d)



Fe thin film with periodic variation of magnetic anisotropy, via combination (a) + (e) [2]



Electron microscopy of epitaxially grown Fe nanowires with Au cap, via combination (b) + (e)

NANOBIOMEDICINE

- Uem Y., Kim C. *Facile synthesis of hybrid magnetic and spin crossover noparticles*

- Jurga S., Wereszczynska B., Skupin S., Mrugalska P., Zalewski T. *Enhanced Relaxivity of Paramagnetic Liposomal Theranostics Achieved by Photosensitizer Incorporation*

- Ramanavicius A., Deshmukh M., Bagdžiūnas G., Ramanavičienė A. *Synthesis of a Conducting Polymer Polyaniline Based Layers Suitabl e for the Application in Electrochromic Sensors*

- *and 12 more reports*

IEEE

JAMES E. MORRIS is a Professor of Electrical & Computer Engineering at Portland State University, Oregon, and Professor Emeritus at the State University of New York at Binghamton.

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Region 2 (Eastern US)

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Region 9 (Latin America)

Region 10 (Asia and Pacific)

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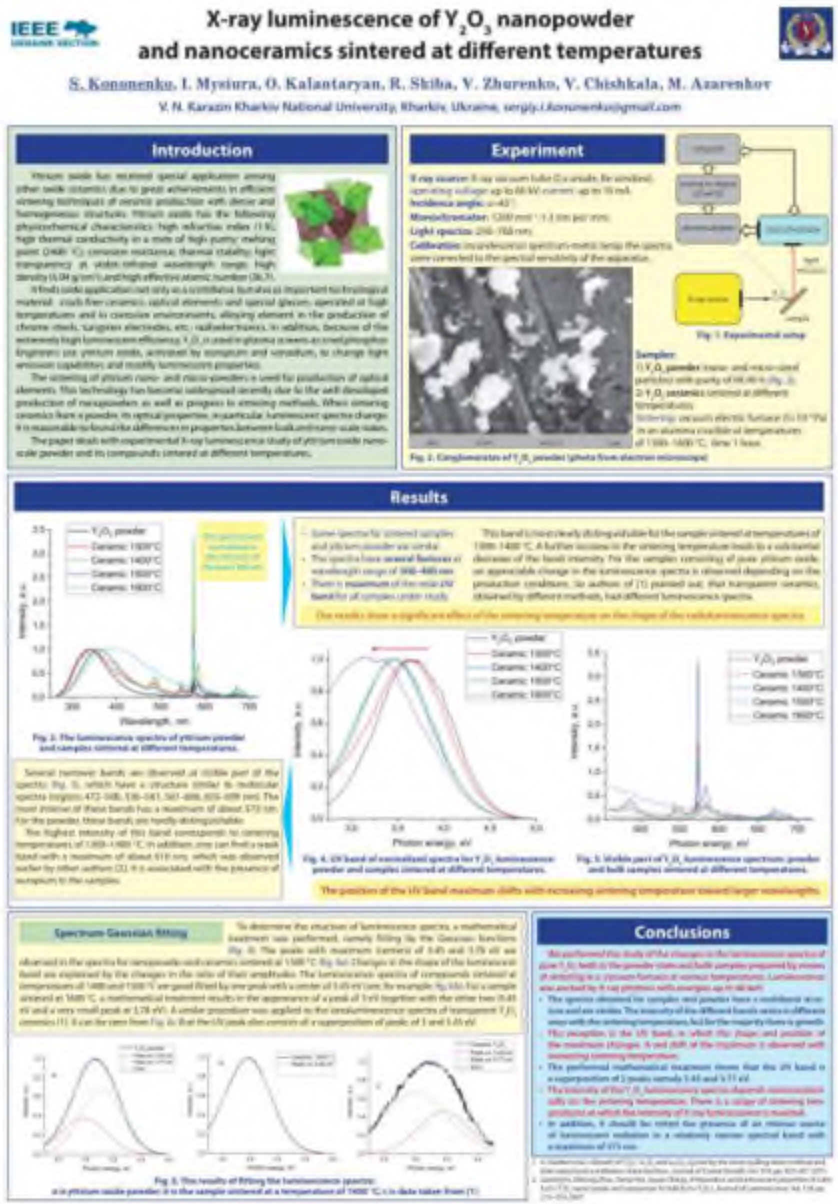
INERDISCIPLINARY

- X-ray Luminescence of Y 2 O 3 Nanopowder and Nanoceramics Sintered at Different Temperatures
  Kononenko S., Mysiura I., Kalantaryan O., Skiba R., Zhurenko V., Chishkala V., Azarenkov M

- Effects of External Parameters on Formation of Nanoparticles in Argon-Acetylene Plasma
  Ivko S., Denysenko I.B., Azarenkov N.A. ...


IEEE
X-ray luminescence of Y_2O_3 nanopowder and nanoceramics sintered at different temperatures
S. Kononenko, I. Mysiura, O. Kalantaryan, R. Shiba, V. Zhurenko, V. Chishkala, M. Azarenkov
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
Introduction
Experiment
Results
Spectrum Gaussian fitting
Conclusions