

Publications

Article

Topographically-guided van der Waals epitaxy: Selective growth of AlN nanowalls on h-BN step edges

Albert M. Dautov, Vladimir G. Dubrovskii, Talgat Shugabaev, Vera V. Lendyashova, Konstantin P. Kotlyar, Alexey Kuznetsov, Prokhor A. Alekseev, Mikhail E. Popov, Igor V. Shtrom, Adilet Toksumakov, Davit Ghazaryan, Alesya V. Parfeneva, Aleksey V. Arsenin, Alexey D. Bolshakov, George E. Cirlin, Vladislav O. Gridchin
Materials Science in Semiconductor Processing 2026 110293

Article

In-Plane Directional MoS₂ Emitter Employing Dielectric Nanowire Cavity

Alexey Kuznetsov, Maria Aleksandrovna Anikina, Adilet Nurlanbekovich Toksumakov, Artem Nikolaevich Abramov, Vyacheslav Vsevolodovich Dremov, Eseniya Zavyalova, Valeriy Mikhailovich Kondratev, Vladimir Victorovich Federov, Ivan Sergeevich Mukhin, Vasily Kravtsov, Kostya Sergeevich Novoselov, Aleksey Vladimirovich Arsenin, Valentyn Sergeevich Volkov, Davit Armenovich Ghazaryan, Alexey Dmitrievich Bolshakov
Small Structures 2025 2400476

Article

Epitaxial Growth of AlN Nanowires on Two-Dimensional h-BN Flakes Transferred Onto SiO₂/Si Substrate

Albert Dautov, Talgat Shugabaev, Alexey Kuznetsov, Konstantin Kotlyar, Davit Ghazaryan, Adilet Toksumakov, Alexey Bolshakov, Alesya Parfeneva, George Cirlin, Vladislav Gridchin
International Conference of Young Specialists on Micro/Nanotechnologies and Electron Devices, EDM 2025 100-103

Article

Leveraging Femtosecond Laser Ablation for Tunable Near-Infrared Optical Properties in MoS₂-Gold Nanocomposites

Aleksey V. Arsenin, Alexey D. Bolshakov, Ilya A. Zavidovskiy, Ilya V. Martynov, Daniil I. Tselikov, Alexander V. Syuy, Anton A. Popov, Sergey M. Novikov, Andrei V. Kabashin, Gleb I. Tselikov, Valentyn S. Volkov
Nanomaterials 2024 1961

Article

Elastic Gallium Phosphide Nanowire Optical Waveguides—Versatile Subwavelength Platform for Integrated Photonics

Alexey Kuznetsov, Eduard Moiseev, Artem N. Abramov, Nikita Fominykh, Vladislav A. Sharov, Valeriy M. Kondratev, Ivan I. Shishkin, Konstantin P. Kotlyar, Demid A. Kirilenko, Vladimir V. Fedorov, Svetlana A. Kadinskaya, Alexandr A. Vorobyev, Ivan S. Mukhin, Aleksey V. Arsenin, Valentyn S. Volkov,

Vasily Kravtsov, Alexey D. Bolshakov

Small 2023 2301660

Article

Self-assembled photonic structure: a Ga optical antenna on GaP nanowires

Alexey Kuznetsov, Prithu Roy, Dmitry V. Grudinin, Valeriy M. Kondratev, Svetlana A. Kadinskaya,

Alexandr A. Vorobyev, Konstantin P. Kotlyar, Evgeniy V. Ubyivovk, Vladimir V. Fedorov, George E. Cirlin,

Ivan S. Mukhin, Aleksey V. Arsenin, Valentyn S. Volkov, Alexey D. Bolshakov

Nanoscale 2023 2332 - 2339

Article

Numerical Study of GaP Nanowires: Individual and Coupled Optical Waveguides and Resonant Phenomena

Maria A. Anikina, Prithu Roy, Svetlana A. Kadinskaya, Alexey Kuznetsov, Valeriy M. Kondratev,

Alexey D. Bolshakov

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Article

Deep-Level Emission Tailoring in ZnO Nanostructures Grown via Hydrothermal Synthesis

Alexey D. Bolshakov, Svetlana A. Kadinskaya, Valeriy M. Kondratev, Ivan K. Kindyushov, Olga Yu. Koval,

Dmitry I. Yakubovsky, Alexey Kusnetsov, Alexey I. Lihachev, Alexey V. Nashchekin, Irina Kh. Akopyan,

Alexey Yu. Serov, Mariana E. Labzovskaya, Sergey V. Mikushev, Boris V. Novikov, Igor V. Shtrom

Nanomaterials 2023 58

Article

Photoluminescence anisotropy in hybrid nanostructures based on gallium phosphide nanowire and 2D transition metal dichalcogenides

MA Anikina, A Kuznetsov, AN Toksumakov, VV Dremov, DA Ghazaryan, VV Fedorov, AV Arsenin,

VS Volkov, AD Bolshakov

St. Petersburg State Polytechnical University Journal: Physics and Mathematics 2023 3.2

Article

Si Nanowire-Based Schottky Sensors for Selective Sensing of NH₃ and HCl via Impedance Spectroscopy

Valeriy M. Kondratev, Ekaterina A. Vyacheslavova, Talgat Shugabaev, Demid A. Kirilenko,

Alexey Kuznetsov, Svetlana A. Kadinskaya, Zamir V. Shomakhov, Artem I. Baranov,

Svetlana S. Nalimova, Vyacheslav A. Moshnikov, Alexander S. Gudovskikh, Alexey D. Bolshakov

ACS Applied Nano Materials 2023 11513 - 11523

Article

Single GaP nanowire nonlinear characterization with the aid of an optical trap

Alexey D. Bolshakov, Ivan Shishkin, Andrey Machnev, Mihail Petrov, Demid A. Kirilenko,

Vladimir V. Fedorov, Ivan S. Mukhin, Pavel Ginzburg

Nanoscale 2022 993 - 1000

Article

Anisotropic Radiation in Heterostructured "Emitter in a Cavity" Nanowire

Alexey D. Bolshakov, Alexey Kuznetsov, Prithu Roy, Valeriy M. Kondratev, Vladimir V. Fedorov,

Article

Silicon Nanowire-Based Room-Temperature Multi-environment Ammonia Detection

Alexey D. Bolshakov, Valeriy M. Kondratev, Ivan A. Morozov, Ekaterina A. Vyacheslavova,
Demid A. Kirilenko, Alexey Kuznetsov, Svetlana A. Kadinskaya, Vyacheslav A. Moshnikov,
Alexander S. Gudovskikh, Svetlana S. Nalimova

ACS Applied Nano Materials 2022 9940 - 9949

Article

XRD Evaluation of Wurtzite Phase in MBE Grown Self-Catalyzed GaP Nanowires

Alexey D. Bolshakov, Olga Yu. Koval, Vladimir V. Fedorov, Igor E. Eliseev, Sergey V. Fedina,
Georgiy A. Sapunov, Stanislav A. Udoenko, Liliia N. Dvoretckaia, Demid A. Kirilenko,
Roman G. Burkovsky, Ivan S. Mukhin

Nanomaterials 2021 960

Article

Work function tailoring in gallium phosphide nanowires

Alexey Bolshakov, Vladislav Sharov, Prokhor Alekseev, Vladimir Fedorov, Mikhail Nestoklon,
Alexander Ankudinov, Demid Kirilenko, Georgiy Sapunov, Olga Koval, George Cirlin, Ivan Mukhin
Applied Surface Science 2021 150018

Article

Tailoring Morphology and Vertical Yield of Self-Catalyzed GaP Nanowires on Template-Free Si Substrates

Alexey D. Bolshakov, Vladimir V. Fedorov, Yury Berdnikov, Nickolay V. Sibirev, Sergey V. Fedina,
Georgiy A. Sapunov, Liliia N. Dvoretckaia, George Cirlin, Demid A. Kirilenko, Maria Tchernycheva,
Ivan S. Mukhin

Nanomaterials 2021 1949

Article

Gallium Phosphide Nanowires in a Free-Standing, Flexible, and Semitransparent Membrane for Large-Scale Infrared-to-Visible Light Conversion

Alexey Bolshakov, Vladimir V. Fedorov, Sergey V. Makarov, Olga Sergaeva, Vladimir Neplokh,
Daria Markina, Stephanie Bruyere, Grégoire Saerens, Mihail I. Petrov, Rachel Grange, Maria Timofeeva,

Ivan S. Mukhin

ACS Nano 2020 10624 - 10632

Article

Perovskite-Gallium Phosphide Platform for Reconfigurable Visible-Light Nanophotonic Chip

Alexey Bolshakov, Pavel Trofimov, Anatoly P. Pushkarev, Ivan S. Sinev, Vladimir V. Fedorov,
Stéphanie Bruyère, Ivan S. Mukhin, Sergey V. Makarov

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