

Publications

Article

Exploring van der Waals materials with high anisotropy: geometrical and optical approaches

Aleksandr S Slavich, Georgy A Ermolaev, Mikhail K Tatmyshevskiy, Adilet N Toksumakov,
Olga G Matveeva, Dmitriy V Grudin, Kirill V Voronin, Arslan Mazitov, Konstantin V Kravtsov,
Alexander V Syuy, Dmitry M Tsymbarenko, Mikhail S Mironov, Sergey M Novikov, Ivan Kruglov,
Davit A Ghazaryan, Andrey A Vyshnevyy, Aleksey V Arsenin, Valentyn S Volkov, Kostya S Novoselov
Light: Science and Applications 2024 68

Article

Wandering principal optical axes in van der Waals triclinic materials

Georgy A Ermolaev, Kirill V Voronin, Adilet N Toksumakov, Dmitriy V Grudin, Ilia M Fradkin,
Arslan Mazitov, Aleksandr S Slavich, Mikhail K Tatmyshevskiy, Dmitry I Yakubovsky, Valentin R Solovey,
Roman V Kirtaev, Sergey M Novikov, Elena S Zhukova, Ivan Kruglov, Andrey A Vyshnevyy,
Denis G Baranov, Davit A Ghazaryan, Aleksey V Arsenin, Luis Martin-Moreno, Valentyn S Volkov,
Kostya S Novoselov
Nature Communications 2024 1552

Article

Broadband optical properties of Ti3C2 MXene revisited

Aleksey V. Arsenin, Valentyn S. Volkov, Daria A. Panova, Gleb I. Tselikov, Georgy A. Ermolaev,
Alexander V. Syuy, Dmitrii S. Zimbovskii, Olesya O. Kapitanova, Dmitry I. Yakubovsky, Arslan B. Mazitov,
Ivan A. Kruglov, Andrey A. Vyshnevyy
Optics Letters 2024 25-28

Article

Crystallinity as a factor of SERS stability of silver nanoparticles formed by Ar⁺ irradiation

Aleksey V. Arsenin, Valentyn S. Volkov, Natalia V. Doroshina, Oleg A. Streletskiy, Ilya A. Zavidovskiy,
Mikhail K. Tatmyshevskiy, Gleb I. Tselikov, Olesya O. Kapitanova, Alexander V. Syuy, Roman Romanov,
Prabhash Mishra, Vjaceslavs Bobrovs, Andrey M. Markeev, Dmitry I. Yakubovsky, Irina A. Veselova,
Sergey M. Novikov
Heliyon 2024 e27538

Article

Chiral Photonic Super-Crystals Based on Helical van der Waals Homostructures

Kirill V. Voronin, Adilet N. Toksumakov, Georgy A. Ermolaev, Aleksandr S. Slavich,
Mikhail K. Tatmyshevskiy, Sergey M. Novikov, Andrey A. Vyshnevyy, Aleksey V. Arsenin,
Kostya S. Novoselov, Davit A. Ghazaryan, Valentyn S. Volkov, Denis G. Baranov
Laser and Photonics Reviews 2024 2301113

Article

Programmable Carbon Nanotube Networks: Controlling Optical Properties Through Orientation and Interaction

Kirill V. Voronin, Georgy A. Ermolaev, Maria G. Burdanova, Aleksandr S. Slavich, Adilet N. Toksumakov, Dmitry I. Yakubovsky, Maksim I. Paukov, Ying Xie, Liu Qian, Daria S. Kopylova, Dmitry V. Krasnikov, Davit A. Ghazaryan, Denis G. Baranov, Alexander I. Chernov, Albert G. Nasibulin, Jin Zhang, Aleksey V. Arsenin, Valentyn Volkov
Advanced Science 2024 2404694

Article

Polarization control of lasing from few-layer MoTe₂ coupled with the optical metasurface supporting quasi-trapped modes

A. V. Prokhorov, A. N. Toksumakov, A. V. Shesterikov, F. M. Maksimov, M. K. Tatmyshevskiy, M. Yu. Gubin, R. V. Kirtaev, E. I. Titova, D. I. Yakubovsky, E. S. Zhukova, V. V. Burdin, S. M. Novikov, A. I. Chernov, D. A. Ghazaryan, A. V. Arsenin, V. S. Volkov
Applied Physics Letters 2024 041702

Article

Anisotropic Optical Properties of Monolayer Aligned Single-Walled Carbon Nanotubes

Aleksey V. Arsenin, Valentyn S. Volkov, Georgy A. Ermolaev, Ying Xie, Liu Qian, Mikhail K. Tatmyshevskiy, Aleksandr S. Slavich, Jin Zhang, Alexander I. Chernov
Physica Status Solidi - Rapid Research Letters 2024 2300199

Article

Exploring stable hot carrier multiplication in filled carbon nanotubes

Aleksey V. Arsenin, Maksim I. Paukov, Shuang Sun, Anna A. Vorfolomeeva, Alexander V. Syuy, Roman I. Romanov, Mikhail S. Mironov, Andrey A. Vyshnevyy, Gennadiy A. Komandin, Lyubov G. Bulusheva, Alexander V. Okotrub, Valentyn Volkov, Yan Zhang, Maria G. Burdanova
Carbon 2024 119580

Article

Laser-synthesized TiN-based nanoparticles as novel efficient electrostatic nanosorbent for environmental water cleaning

Aleksey V Arsenin, Valentyn S Volkov, Alexander V Syuy, Ilya V Martynov, Ilya A Zavidovskiy, Dmitry V Dyubo, Qingjiang Sun, Xi Yang, Gleb V Tikhonowski, Daniil I Tselikov, Maxim S Savinov, Islam V Sozaev, Anton A Popov, Sergey M Klimentov, Gleb I Tselikov, Sergey M Novikov, Xiangwei Zhao, Andrei V Kabashin
Physica Scripta 2024 115914

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

Unveiling the broadband optical properties of Bi₂Te₃: Ultrahigh refractive index and

promising applications

Aleksey V. Arsenin, Valentyn S. Volkov, Georgy A. Ermolaev, et al.

Applied Physics Letters 2024 241101

*Article***SERS analysis of single cells and subcellular components: A review**

A. Arsenin, V. Volkov, M. Barshutina

Heliyon 2024 e37396

*Article***Graphene on SiO₂/Si and Al₂O₃ under thermal annealing and electric current: Competition of dopant desorption and conformation to substrate**

E.A. Kolesov, M.S. Tivanov, O.V. Korolik, I.A. Svito, A.S. Antonovich, Yu. Klishin, D.A. Ghazaryan,

A.V. Arsenin, V.S. Volkov, O.O. Kapitanova, G.N. Panin

Diamond and Related Materials 2023 110362

*Article***Dry Assembly of van der Waals Heterostructures Using Exfoliated and CVD-Grown 2D Materials**

Adilet N. Toksumakov, M. N. Sidorova, A. S. Slavich, M. K. Tatmyshevskiy, I. A. Zavidovskiy,

G. A. Ermolaev, V. S. Volkov, D. A. Ghazaryan, A. V. Arsenin

Bulletin of the Russian Academy of Sciences: Physics 2023 S453-S457

*Article***Hexagonal boron nitride nanophotonics: a record-breaking material for the ultraviolet and visible spectral ranges**

D. V. Grudinin, G. A. Ermolaev, D. G. Baranov, A. N. Toksumakov, K. V. Voronin, A. S. Slavich,

A. A. Vyshnevyy, A. B. Mazitov, I. A. Kruglov, D. A. Ghazaryan, A. V. Arsenin, K. S. Novoselov, V. S. Volkov

Materials Horizons 2023 2427-2435

*Article***Anomalous optical response of graphene on hexagonal boron nitride substrates**

Adilet N Toksumakov, Georgy A Ermolaev, Mikhail K Tatmyshevskiy, Yuri A Klishin, Aleksandr S Slavich,

Ilya V Begichev, Dusan Stosic, Dmitry I Yakubovsky, Dmitry G Kvashnin, Andrey A Vyshnevyy,

Aleksey V Arsenin, Valentyn S Volkov, Davit A. Ghazaryan

Communications Physics 2023 13

*Article***Tunable THz flat zone plate based on stretchable single-walled carbon nanotube thin film**

Gleb M Katyba, Nikita I Raginov, Eldar M Khabushev, Vladislav A Zhelnov, Andrei Gorodetsky,

Davit A Ghazaryan, Mikhail S Mironov, Dmitriy V Krasnikov, Yuri G Gladush, James Lloyd-Hughes,

Albert G Nasibulin, Aleksey V Arsenin, Valentyn S Volkov, Kirill I Zaytsev, Maria G Burdanova

Optica 2023 53-61

*Article***Optical Nanoimaging of Surface Plasmon Polaritons Supported by Ultrathin Metal Films**

Aleksey V. Arsenin, Valentyn S. Volkov, Dmitriy I. Yakubovsky, Dmitriy V. Grudinin, Georgy A. Ermolaev,

Kirill Voronin, Dmitry A. Svintsov, Andrey A. Vyshnevyy, Mikhail S. Mironov

Nano Letters 2023 9461-9467

Article

Physisorption-Mediated Charge Transfer in TiS₂ Nanodiscs: A Room Temperature Sensor for Highly Sensitive and Reversible Carbon Dioxide Detection

Aleksey V. Arsenin, Valentyn S. Volkov, Samrah Manzoor, Mohammad Talib, Sergey M. Novikov,

Prabhash Mishra

ACS Sensors 2023 3435-3447

Article

van der Waals Materials for Overcoming Fundamental Limitations in Photonic Integrated Circuitry

Aleksey V. Arsenin, Valentyn S. Volkov, Andrey A. Vyshnevyy, Georgy A. Ermolaev, Dmitriy V. Grudinin,

Kirill V. Voronin, Ivan Kharichkin, Arslan Mazitov, Ivan A. Kruglov, Dmitry I. Yakubovsky, Prabhash Mishra,

Roman V. Kirtaev, Kostya S. Novoselov, Luis Martin-Moreno

Nano Letters 2023 8057-8064

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

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

Temperature-dependent Raman spectroscopy and thermal conductivity of TiS₂ hexagonal nanodiscs

Mohammad Talib, Samrah Manzoor, Davit A. Ghazaryan, Aleksey V. Arsenin, Valentyn S. Volkov,

Prabhash Mishra

Materials Science in Semiconductor Processing 2022 107084

Article

High-refractive index and mechanically cleavable non-van der Waals InGaS₃

Adilet N. Toksumakov, Georgy A. Ermolaev, Aleksandr S. Slavich, Natalia V. Doroshina,,

Ekaterina V. Sukhanova, Dmitry I. Yakubovsky, Alexander V. Syuy, Sergey M. Novikov,,
Roman I. Romanov, Andrey M. Markeev, Aleksandr S. Oreshonkov, Dmitry M. Tsymbarenko,
Zakhar I. Popov, Dmitry G. Kvashnin, Andrey A . Vyshnevyy, Aleksey V. Arsenin, Davit A. Ghazaryan,
Valentyn S. Volkov
npj 2D Materials and Applications 2022 85

Article

Broadband optical and terahertz properties of 1D van der Waals heteronanotubes

Maria G. Burdanova, Yongjia Zheng, Maksim I. Paukov, Georgy A. Ermolaev, Gennady A. Komandin,
Davit Ghazaryan, Sergey Novikov, Rong Xiang, Shohei Chiashi, Shigeo Maruyama, James Lloyd-Hughes,
Alexey V. Arsenin, Valentin Volkov

IEEE Photonics Journal 2022 182243
