

Research Institute of Physics

Ֆոտոնիկայի և արհեստական բանականության լաբորատորիա

Leading researcher

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Publications

Article

A Dynamic Analysis of Toron Formation in Chiral Nematic Liquid Crystals Using a Polarization Holographic Microscope

Tikhon V. Reztsov, Aleksey V. Chernykh, Tetiana Orlova, Nikolay V. Petrov

Polymers MDPI 2025 1849

Article

Polarization-controlled orbital angular momentum of light passing through a cholesteric spherulite

A. N. Shalev, A. A. Misura, A. O. Georgieva, A. V. Chernykh, N. V. Petrov, T. Orlova, I. S. Lobanov,

E. V. Aksenova, V. M. Uzdin, A. D. Kiselev

Optics Letters 2025 4866-4869

Article

Rewritable Binary Recording of the Photon Spin State in Chiral Liquid Crystals

Nicolas Bruni, Charles Loussert, Mushegh Rafayelyan, Tetiana Orlova, Delphine Coursault,

Etienne Brasselet

Physical Review Letters 2025 223804

Article

Fine Tuning of the Rotational Speed of Light-Driven, Second-Generation Molecular Motors by Fluorine Substitution

Ivan Tambovtsev, Yorick L. A. Schmerwitz, Gianluca Levi, Darina D. Darmoroz, Pavel V. Nesterov,

Tetiana Orlova, Hannes Jónsson

Journal of Physical Chemistry Letters 2025 4014 - 4020

Article

Microsecond-scale observation of phase transition and diffusion in 5CB liquid crystal at the molecular level

N. Kasapenko, T. Orlova, N. Kondratyuk

Journal of Chemical Physics 2025 154901

Article

Light-Induced Heating of Microsized Nematic Volumes

Dmitrii Shcherbinin, Denis A. Glukharev, Semyon Rudyi, Anastasiia Piven, Tetiana Orlova, Izabela Sliwa,

Alex Zakharov

Crystals 2025 822

Article

Light-induced isotropic pen for generation of topological solitons and hopfion-toron transition in frustrated chiral nematic films

Sergey A. Shvetsov, Darina D. Darmoroz, Alexey Vasil'ev, Tetiana Orlova, Igor S. Lobanov,
Mushegh Rafayelyan
Chaos, Solitons and Fractals 2025 116905

Article

On-Demand Photopatterned Twisted Nematics for Generation of Polychromatic Vector Fields

Edvard Grigoryan, Hayk H. Harutyunyan, Hrayr Hakobyan, Sergey A. Shvetsov, Tetiana Orlova,

Mushegh Rafayelyan, Vahram L. Grigoryan

Crystals 2025 877

Article

Nanostructured Material Design via a Retrieval-Augmented Generation (RAG) Approach: Bridging Laboratory Practice and Scientific Literature

Nikita A. Krotkov, Dmitrii A. Sbytov, Anna A. Chakhoyan, Polina I. Kornienko, Anna A. Starikova,

Maxim G. Stepanov, Anastasiia O. Piven, Timur A. Aliev, Tetiana Orlova, Mushegh S. Rafayelyan,

Ekaterina V. Skorb

Journal of Chemical Information and Modeling 2025 11064-11078

Article

Large Supramolecular Patterns in Photoactive Chiral Liquid Crystals for Light-Controllable Soft Micromechanical Systems

Darina Darmoroz, Tetiana Orlova, Anastasiia Piven

Small Structures 2025 e202500506

Article

Machine learning methods for liquid crystal research: phases, textures, defects and physical properties

Anastasiia Piven, Darina Darmoroz, Ekaterina Skorb, Tetiana Orlova

Soft Matter 2024 1380 - 1391

Article

Topological Learning for the Classification of Disorder: An Application to the Design of Metasurfaces

Tristan Madeleine, Nina Podoliak, Oleksandr Buchnev, Ingrid Membrillo Solis, Tetiana Orlova,

Maria van Rossem, Malgosia Kaczmarek, Giampaolo D'Alessandro, Jacek Brodzki

ACS Nano 2024 630–640

Article

Reactions of 5-(Trialkyl)silylpent-1-en-4-yn-3-ones with Hydrazines: Original Synthetic Routes to Luminescent Substances Containing Azole Motifs

Ivan S. Odin, Kareem V. Gordon, Radik N. Itakhunov, Dmitry M. Gusev, Sergey A. Sokov,

Anna V. Vologzhanina, Stanislav A. Grabovskiy, Ilya M. Sosnin, Anton I. Ukolov, Olga I. Orlova,

Vladimir A. Lazarenko, Pavel V. Dorovatovskii, Darina D. Darmoroz, Anastasiia O. Piven, Tetiana Orlova,

Alexander A. Golovanov

SYNTHESIS 2024 243-266

Article

МЕТОД ОПТИЧЕСКОЙ МОЛЕКУЛЯРНОЙ ГЕНЕРАЦИИ ЛОКАЛИЗОВАННЫХ ХИРАЛЬНЫХ СТРУКТУР В ФОТОАКТИВНЫХ ЖИДКОКРИСТАЛЛИЧЕСКИХ ПЛЕНКАХ

Article

Machine learning for soft and liquid molecular materials

Tetiana Orlova, Anastasiia Piven, Darina Darmoroz, Timur Aliev, Tamer Mahmoud Tamer Abdel Razik, Anton Boitsev, Natalia Grafeeva, Ekaterina Skorb

Digital Discovery 2023 298-315

Article

Optical nonlinearity of a dual-frequency nematic liquid crystal via temperature-mediated mapping of dielectric anisotropy

S. A. Shvetsov, T. Orlova, A. V. Emelyanenko, A. S. Zolot'ko, H. L. Ong

Optics Express 2022 47909-47920

Article

Optical Imaging and Analytical Design of Localized Topological Structures in Chiral Liquid Crystals

Igor Lobanov, Elena Aksenova, Tetiana Orlova, Darina Darmoroz, Valery Uzdin, Alexei D. Kiselev

Symmetry 2022 2476

Article

Light-Induced Structures and Microparticle Transportation in a Free-Surface Frustrated Chiral Nematic Film

Sergey A. Shvetsov, Tetiana Orlova, Alexander V. Emelyanenko

Crystals 2022 549

Article

Nanoparticle-Induced Property Changes in Nematic Liquid Crystals

Nicolas Brouckaert, Nina Podoliak, Tetiana Orlova, Denitsa Bankova, Angela F. De Fazio,

Antonios G. Kanaras, Ondrej Hovorka, Giampaolo D'Alessandro, Malgosia Kaczmarek

Nanomaterials 2022 341

Article

When Bubbles Are Not Spherical: Artificial Intelligence Analysis of Ultrasonic Cavitation Bubbles in Solutions of Varying Concentrations

Ilya Korolev, Timur A. Aliev, Tetiana Orlova, Sviatlana A. Ulasevich, Michael Nosonovsky,

Ekaterina V. Skorb

Journal of Physical Chemistry B 2022 3161 - 3169

Article

Tracking the time evolution of soft matter systems via topological structural heterogeneity

Ingrid Membrillo Solis, Tetiana Orlova, Karolina Bednarska, Piotr Lesiak, Tomasz R. Woliński,

Giampaolo D'Alessandro, Jacek Brodzki, Malgosia Kaczmarek

Communications Materials 2022 1
