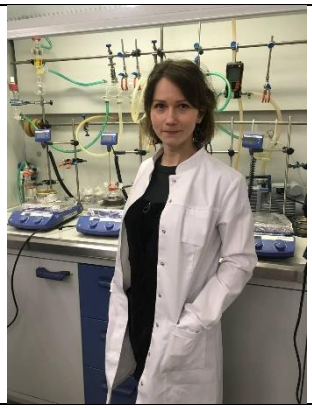	USHAKOVA, Elena V. PhD
Research interests	✓ Synthesis and functionalization of nanoparticles ✓ Hybrid materials based on metal, semiconductor and magnetic nanoparticles ✓ Nanoparticles emitting in the red and near infrared region of the spectrum ✓ Chiral nanoparticles for theranostics
Features of the PhD program	✓ Training and work on modern spectral equipment, including microscopy methods ✓ Collaborations with foreign research groups (Australia, Hong Kong, Germany, Ireland) ✓ Financial support for a PhD student in completing kpi.
List of the supervisor's research projects (participation/supervision)	✓ RSF «Chiral carbon nanoparticles with optical transitions in the red and near-infrared regions for theranostics» (2022-2024), PI; 2025-2026, Investigator ✓ Priority 2030 «Functionalized carbon nanoparticles» (2022-2024), PI
List of potential thesis topics	✓ Optical sensors based on carbon nanoparticles for theranostics ✓ Nanocrystals for spintronics devices ✓ Nanocrystals for solar cells ✓ Nanocrystals and hybrid materials based on them for agrophotonics
Publications in the last five years	53 (Scopus / Web of Science)
Key publications	1. Hua Y. et al. Carbon-Dot-Assisted Room-Temperature Crystallization of Quasi-Two-Dimensional Perovskite Emitting Layers for Annealing-Free Light-Emitting Diodes //Nano Letters. – 2025. 2. Liu H. et al. Helical Perovskite Nanowires with Strong Circularly Polarized Luminescence Self-Assembled from Red-Emitting CsPbI3 Quantum Dots Following Chiral Ligand Exchange //ACS nano. – 2025. – Т. 19. – №. 18. – С. 17774-17784. 3. Das A., et al. Revealing the nature of optical activity in carbon dots produced from different chiral precursor molecules //Light: Science & Applications. – 2022. – V. 11(92). 4. Döring A., Ushakova E.V., Rogach A. L. Chiral carbon dots: synthesis, optical properties, and emerging applications //Light: Science & Applications. – 2022. – V. 11(75). DOI: 10.1038/s41377-022-00764-1. IF=18.491, SJR=6.1, Q1 (2013)

	5. Zhang B. et al. Assignment of core and surface states in multicolor-emissive carbon dots //Small. – 2023. – Т. 19. – №. 31. – С. 2204158. 5.
Key IPs	Ushakova E.V. Stepanidenko E.A., Efimova A.A. Carbon nanoparticles and their fabrication method
Supervisor's specific requirements	✓ English ✓ Basic knowledge in optics/organic chemistry ✓ Learnability
Code of the subject area of the PhD program	1.3.6 Optics 1.3.17 Chemical Physics, Burning and Combustion, Physics of Extreme States of Matter