	SMIRNOV, Evgeny A. PhD
Research interests	✓ Nanotechnology, material science, nanoparticles: synthesis and properties of colloidal particles, preparation of novel materials ✓ Physical chemistry, surface chemistry: self-assembly at soft interfaces (liquid-liquid, liquid-air, etc.) ✓ Electrochemistry: investigation of properties of nanoparticles and their assemblies, in particular for photocatalytic and electrocatalytic applications ✓ Analytical chemistry: application of nanoparticles and their assemblies for surface enhanced methods, for example, SERS, as well as in ELISA-based methods
Features of the PhD program	✓ A unique opportunity to work with a wide variety of equipment both self-made, and within the CCU ✓ In addition to the capabilities of the Infochemistry Research Center, the research supervisor has a wide network of foreign scientific contacts - the University of Limerick in Ireland (self-assembly and electrochemistry), the University of Turku in Finland (electrochemistry), the University of Oldenburg in Germany (electrochemistry and nanotechnology), Fudan University in China (analytical chemistry) ✓ As a part of the grant work postgraduate students can be provided with financial support
List of the supervisor's research projects (participation/supervision)	✓ Head of the "Lab-in-AR" project within the framework of the "Priority-2030" university development program ✓ Main Researcher in RSCF № 22-73-00206 "Whispering Gallery Mode Microresonators with Plasmon Field Amplified Embedded Nanoscale Luminophores: Architecture Development and Optimization" ✓ Leader in RSCF № 22-73-00206 "Self-assembly of gold and silver nanoparticles at liquid-liquid interfaces as a platform for Surface Enhanced Raman Spectroscopy" ✓ Researcher in TSITIS №AAAA-A20-120121790037-7 "Development of technology for obtaining sunflower protein isolate" ✓ Researcher in RSCF № 20-13-00330 "Development of fluorescent sensor platforms based on composite materials for the determination of biologically active compounds in complex matrices"
List of potential thesis topics	✓ Self-assembly of (non)metallic nanoparticles at soft interfaces and their implementation for optics, catalytic and electrocatalytic applications

	✓ Self-assembly of 2D materials (graphene, graphene oxide, MXene) at soft interfaces and investigation of their properties (optical, catalytic and electrocatalytic) ✓ Sensing elements based on in-situ generation of reagents (in particular, ELISA sensors with H2O2 in-situ generation) ✓ Extraction of plant proteins and biologically active substances ✓ Modeling by using DFT, MD
Publications in the last five years	33 (Scopus / Web of Science / RSCI)
Key publications	1. K.A. Maleeva, A. Pavlova, G.V. Zmaga, A.V. Baranov, A.P. Tkach, M.A. Baranov, E. Smirnov, K.V. Bogdanov, SERS tags based on polymer microspheres decorated by gold nanoparticles: layer-by-layer deposition vs. aggregation from quasi-stable colloidal solution, Journal of Materials Chemistry C, 2025. SRJ = 1.220 (Q1) DOI: 10.1039/D5TC01956G 2. O. Volkova, V. Kravtsov, E.V. Skorb, E. Smirnov, Effective Immobilization of hnRNPA2B1 Protein in a PEI Layer on a QCM Gold Electrode, Langmuir, 41 (13), 2025, 8690-8702. SRJ = 0.763 (Q1) DOI: 10.1021/acs.langmuir.4c05250 3. A. Pavlova, K. Maleeva, I.V. Moskalenko, V. Belyaev, M. Zhukov, D. Kirilenko, K.V. Bogdanov, E. Smirnov, Self-Assembled Gold Nanoparticles as Reusable SERS-Substrates for Polyphenolic Compound Detection, International Journal of Molecular Science, 25 (23), 2024, 12785. SRJ = 1.273 (Q1) DOI: 10.3390/ijms252312785 4. A. Aglikov, O. Volkova, A. Bondar, I. Moskalenko, A. Novikov, E. V. Skorb, E. Smirnov, Memristive Effect in Ti3C2Tx (MXene) Polyelectrolyte Multilayers, ChemPhysChem, 2023. SRJ = 0.553 (Q2) DOI:10.1002/cphc.202300187 5. K.A. Rukhlyada, V. V. Matytcina, A.A. Baldina, O. Volkova, D.A. Kozodaev, N. V. Barakova, O.Y. Orlova, E. Smirnov, E. V. Skorb, Universal Method Based on Layer-by-Layer Assembly for Aptamer-Based Sensors for Small-Molecule Detection, Langmuir, 39 (31), 2023, 10820-10827. SRJ = 0.833 (Q1) DOI: 10.1021/acs.langmuir.3c00822
Key IPs	A.E. Kuropteva, E.A. Smirnov, I.A. Vweselova, patent application No. 2022118324 “Hydrogene Peroxide Generation Method for Application in Spectrophotometric, Colorimetric and Luminescent Analysis with Peroxidase”, 2022

Supervisor's specific requirements	✓ Background in inorganic chemistry, physical chemistry, or biochemistry ✓ Hands-on-experience in laboratory and with basic laboratory equipment: mixers, heaters, glassware, pH-meters, conductometers etc. ✓ Analytical methods: SEM/TEM, DLS, spectroscopy (UV-Vis-IR), Raman ✓ Software: Office, OriginLab, ImageJ, script-writing Python or Wolfram Mathematica is welcomed
Code of the subject area of the PhD program	1.4.1 Inorganic Chemistry 1.4.4 Physical Chemistry