

	<p>SMIRNOV, Evgeny A. PhD</p>
<p>Research interests</p>	<ul style="list-style-type: none"> ✓ 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
<p>Features of the PhD program</p>	<p>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 leader has a wide network of foreign scientific contacts - the University of Limerick, Ireland (self-assembly and electrochemistry), the University of Turku, Finland (electrochemistry), the University of Oldenburg, Germany (electrochemistry and nanotechnology), Fudan University, China (analytical chemistry). As a part of the grant work, postgraduate students will be provided with financial support.</p>
<p>List of the supervisor's research projects (participation/supervision)</p>	<ul style="list-style-type: none"> ✓ RSCF № 22-73-00206 Self-assembly of gold and silver nanoparticles at liquid-liquid interfaces as a platform for Surface Enhanced Raman Spectroscopy (supervision) ✓ TSITIS №AAAA-A20-120121790037-7 Development of technology for obtaining sunflower protein isolate (researcher) ✓ RSCF № 20-13-00330 Development of fluorescent sensor platforms based on composite materials for the determination of biologically active compounds in complex matrices (researcher)
<p>List of potential thesis topics</p>	<ul style="list-style-type: none"> ✓ 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)
<p>Publications in the last five years</p>	<p>13 (Scopus / Web of Science / RSCI)</p>

Key publications	<p>1. E. Smirnov, 2018, Assemblies of Gold Nanoparticles at Liquid-Liquid Interfaces (Springer Theses Series), Springer International Publishing, Cham, 2018, 270. DOI: 10.1007/978-3-319-77914-0</p> <p>2. M. D. Scanlon, E. Smirnov, T. J. Stockmann, P. Peljo, Gold nanofilms at liquid-liquid interfaces: an emerging platform for redox electrocatalysis, nanoplasmonic sensors and electrovariable optics, Chem. Rev., 118, 2018, 3722-3751. Q1 (1999), SRJ = 20.53. DOI: 10.1021/acs.chemrev.7b00595. Front page: https://pubs.acs.org/toc/chreay/118/7</p> <p>3. E. Smirnov, P. Peljo, H. H. Girault, Gold Raspberry-Like Colloidosomes Prepared at the Water-Nitromethane Interface, Langmuir, 34, 2018, 2758-2763. Q1 (1999), SRJ = 1.04. DOI: 10.1021/acs.langmuir.7b03532</p> <p>4. P. Peljo, M.D. Scanlon, A.J. Olaya, L.Rivier, E. Smirnov, and H. Girault, Redox Electrocatalysis of Floating Nanoparticles: Determining Electrocatalytic Properties Without the Influence of Solid Supports, J. Phys. Chem. Lett., 8, 2017, 3564–3575. Q1 (1999), SRJ = 2.56. DOI: 10.1021/acs.jpcclett.7b00685</p> <p>5. E. Smirnov, P. Peljo and H. Girault, Self-assembly and redox induced phase transfer of gold nanoparticles at the waterpropylene carbonate interface, Chem. Comm., 53, 2017, 4108-4111. Q1 (1999), SRJ = 1.84. DOI: 10.1039/C6CC09638G</p>
Key IPs	Patent application. A.E. Kuropteva, E.A. Smirnov, I.A. Vweselova, Patent application № 2022118324, Hydrogene Peroxide Generation Method for Application in Spectrophotometric, Colorimetric and Luminescent Analysis with Peroxidase, 2022
Supervisor's specific requirements	<ul style="list-style-type: none"> ✓ 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	1.4.4 Physical Chemistry