

NEUTRON GRAPHIC INVESTIGATIONS OF SUPRAMOLECULAR STRUCTURES BY SAS

Moscow Institute of Physics and Technology (National Research University)

Degree or qualification is awarded: **PhD (Candidate of Science)**

Language of study: **English**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **375 000 RUB**

Programme curator: **Denis Ustyuzhaninov**

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Entry requirements:

- Master's degree / equivalent in a related field
- B2 level of English
- Good track record of publications related to the topic of the intended research
- Strong research proposal 1,500 - 3,500 words

Research supervisor:

[Alexander Kuklin](#)

PhD

Supervisor's research interests:

(condensed matter and small angle scattering technique) molecular biology(structure of proteins, crystallization process, lipid membranes), material science, phase transition in membranes and colloids, high hydrostatic pressure research, Structure of polymers (liquid crystal polymers, dendrimers, track membranes), structure of materials (soils, ribbons, powders), nanosized effects, fractal objects, theory and methods of small angle scattering.

Research highlights:

Top topic of scientific field, unique methods and instrumentation, include complimentary methods and possibility to do measurement on large scale spectrometry (YuMO spectrometer), synchrotron facility (ESRF, Desy), collaboration with some International Centers as well as.

Supervisor's specific requirements:

- MSc (Physics, Chemistry, Biology, Material Science).
- Russian or English Language.
- Computer (Origin, Office).
- Analytic ability.

Main publications:

- A. Kuklin, D. Zabelskii, I. Gordeliy, J. Teixeira, A. Brûlet, V. Chupin, Vadim Cherezov, Valentin Gordeliy. On the origin of the Anomalous Behavior of Lipid Membrane properties in the Vicinity of the chain- Melting phase transition. Scientific reports 10 (1), 1-8.
- Vlasov, A.V.; Kovalev, K.V.; Marx, S.-H.; Round, E.S.; Gushchin, I.Y.; Polovinkin, V.A.; Tsoy, N.M.; Okhrimenko, I.S.; Borshchevskiy, V.I.; Büldt, G.D.; et al. Unusual features of the c-ring of F1FO ATP synthases. Sci. Rep. 2019, 9, 18547.
- D.V. Zabelskii, A.V. Vlasov, Yu L. Ryzhykau, T.N. Murugova, M. Brennich, D.V. Soloviov, O.I. Ivankov, V.I.

- Borshchevskiy, A.V. Mishin, A.V. Rogachev, A. Round, N.A. Dencher, G. Büldt, V.I. Gordeliy, A.I. Kuklin. Ambiguities and completeness of SAS data analysis: investigations of apoferritin by SAXS/ SANS EID and SEC-SAXS methods. In Journal of Physics: Conference Series (Vol. 994, No. 1, p. 012017). IOP Publishing.
- Cherny, A.Y., Anitas, E.M., Osipov, V., & Kuklin, A.I. (2019). The structure of deterministic mass and surface fractals: theory and methods of analyzing small-angle scattering data. Physical Chemistry Chemical Physics. Vol: 21 Issue: 24 pages.: 12748- 12762.
 - A.I. Kuklin, A.V. Rogachev, D.V. Soloviov, O.I. Ivankov, Yu S. Kovalev, P.K. Utrobin, S.A. Kutuzov, A.G. Soloviev, M.I. Rulev and V.I. Gordeliy. Neutronographic investigations of supramolecular structures on upgraded small-angle spectrometer YuMO. IOP Conf. Series: Journal of Physics: Conf. Series 848 (2017), 1, 012010. DOI:10.1088/1742-6596/848/1/012010
 - A.N. Ozerin, D.I. Svergun, V.V. Volkov, A.I. Kuklin, V.I. Gordeliy, A.Kh. Islamov, L.A. Ozerina and D.S. Zavorotnyuk. The spatial structure of dendritic macromolecules, J. Appl. Cryst. (2005). 38, 996–1003.

Specializations within this programme