

14-16 May  
2017  
Peterhof  
Russia



# The future of biology and soft matter research on reactor PIK

## Directions

Structural research of biomolecules on atomic level (neutron crystallography),  
Large macromolecular complexes (small-angle neutron scattering, reflectometry),  
Structural dynamics on atomic and molecular level (quasielastic neutron scattering).

## Participants

Leading Russian scientists working in research centers all over the world, specialists in neutron  
research, structural biology, soft matter, molecular dynamics

## Organizers

NRC «Kurchatov Institute» Petersburg Nuclear Physics Institute (NRC KI PNPI)  
Forschungszentrum Jülich GmbH, Germany (FZJ)  
CREMLIN EU Project ([www.cremlin.eu](http://www.cremlin.eu))

## Program Committee

Co-Chairs: Mikhail Kovalchuk (NRC KI) and Sebastian Schmidt (FZJ)  
Members: Victor Aksenov (NRC KI PNPI), Alexander Ioffe (FZJ), Andrey Konevega,  
Sergey Grigoriev (NRC KI PNPI), Mikhail Avdeev (JINR),  
Vladimir Volkov (FNRC Crystallography and Photonics), Nikolay Tsvetkov (SPbSU)

## Organizing Committee

Chair: Denis Minkin (NRC KI PNPI); Members: Andrey Konevega, Natalia Poltavskaya,  
Dmitry Lebedev (NRC KI PNPI), Raif Vasilov, Vyacheslav Em, Natalia Belushkina,  
Anna Anciferova (NRC KI), Inna Kuranova (FNRC Crystallography and Photonics),  
Elena Abrosimova (FZJ)

## Contacts

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# SCIENTIFIC PROGRAM

## The future of biology and soft matter research on reactor PIK

May 14-16, 2017

**Sunday, May 14**    **Arrival, accommodation**

**Monday, May 15**

08:00 – 08:40    **Registration**

**Chair: Denis Minkin**

08:40 – 08:50	Denis Minkin (NRC KI PNPI)	Opening
08:50 – 09:10	Victor Aksenov (NRC KI)	From solids to soft and life matter
09:10 – 09:30	Alexander Ioffe (FZJ)	Specific features of neutrons for Biosoft investigations

### **SESSION 1. General request from biology / soft matter (Chair: Victor Aksenov)**

09:30 – 10:00	Andrey Panteleev (NRC KI)	Skin nanostructure - current progress, challenges and perspectives
10:00 – 10:30	Nikolay Tsvetkov (SPbSU)	Conformational and physical properties of macromolecular complexes in solutions
10:30 – 10:50	<b>Coffee break</b>	
10:50 – 11:20	Konstantin Shaitan (MSU)	Structural biology and experiments in silico
11:20 – 11:40	Oxana Galzitskaya (Institute of Protein Research RAS)	Molecular mechanism of amyloid formation by Abeta peptide
11:40 – 12:00	Pavel Gotovtsev (NRC KI)	Biotechnology and Bioenergy. Main fields of research in NRC “Kurchatov Institute” and possible fields of megascience application

**Monday, May 15**

**SESSION 2. Crystallography (Chair: Victor Aksenov)**

12:00 - 12:30	Marat Yusupov (IGBMC)	Crystal structures of eukaryotic and bacterial ribosomes
12:30 – 13:00	Alexey Nikulin (Institute of Protein Research RAS)	The first sight of a protein crystallographer on the application of neutron radiation
13:00 – 14:00	<b>Lunch</b>	
14:00 – 14:20	Margarita Marchenkova (NRC KI)	A new approach to the processes study of protein crystallization and protein ordered films formation by means of small angle X-ray and neutron scattering, X-ray reflectometry and X-ray standing waves
14:20 – 14:40	Kholmirzo T. Kholmurodov (JINR)	Computer design of nanoscale phenomena: exploring new materials and new drugs

**SESSION 3. Small-angle neutron scattering and reflectometry for biology and soft matter – 1 (Chair: Victor Aksenov)**

14:40 – 15:10	Artem Feoktystov (FZJ)	Low-resolution Small-angle neutron scattering for biology and soft matter
15:10 – 15:30	Mikhail Avdeev (JINR)	Biological molecules and nanoparticles: friends or enemies?
15:30 – 15:50	Vitaly Pipich (FZJ)	Time resolved small and very-small angle neutron scattering (SANS/VSANS) investigations: biomineralization processes
15:50 – 16:10	Kiselev M.A. (JINR)	Biocompatible complexes for drug delivery: structural aspects
16:10 – 16:30	Alexey Shvetsov (NRC KI PNPI)	All-atom molecular dynamics simulation and neutron scattering
16:30 – 18:10	<b>Coffee break / Posters</b>	

**Tuesday, May 16**

**SESSION 3. Small-angle neutron scattering and reflectometry for biology and soft matter – 2**  
(Chair: Sebastian Schmidt)

08:40 – 09:00	Alexander Ioffe (FZJ)	Neutron Reflectometry for biology and soft matter.
09:00 – 09:30	Boris P. Toperverg (NRC KI PNPI)	Structure and Dynamics of Lipid Membranes Probed by Neutron Reflectometry and Spectroscopy
09:30 – 09:50	Vladimir Volkov (KIF RAS)	On the uniqueness and stability of solutions in problems of determining the structural parameters of nanoparticles from SAS data
09:50 – 10:10	Alexander Kuklin (MIPT)	Soft matter and biology research by small angle scattering on IBR-2.

**SESSION 4. Neutron spectroscopy for biology and soft matter**  
(Chair: Sebastian Schmidt)

10:10 – 10:40	Oxana Ivanova (FZJ)	Neutron spectroscopy for studies of slow dynamics
10:40 – 11:00	Dmitry Lebedev (NRC KI PNPI)	Structure and Dynamics of Biomacromolecular complexes by X-ray and Neutron scattering
11:00 – 11:20	Nikita V. Marchenkov (NRC KI)	Expansion of synchrotron-neutron researches capabilities by application of X-Ray radiation and electrons in NBICS-Technologies Kurchatov Complex
11:20 – 11:30	Eugeniy Moskvina (NRC KI PNPI)	The planned Biosoft facilities suite for PIK reactor
11:30 – 12:30	<b>Coffee break / Posters</b>	
12:30 – 13:00	Mikhail Kovalchuk (NRC KI)	To Be Announced
13:00 – 13:20	Sebastian Schmidt (FZJ)	Wrap up
13:20 – 14:20	<b>Lunch</b>	