



## Document information

Deliverable no.	D5.2
Deliverable title	Workshop on mapping demands of Russian and European photon science communities
Deliverable responsible	NRC KI
Related Work-Package/Task	WP5 Science cooperation with the SSRS-4 synchrotron radiation source in the field of photon Science / Task 5.1: Analysis of the existing and potential Russian X-ray user communities and demands
Type (e.g. Report; other)	Other
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Dissemination level	Public
Due submission date	31.10.2016
Download page	<a href="https://www.cremlin.eu/deliverables">https://www.cremlin.eu/deliverables</a>

Project full title	Connecting Russian and European Measures for Large-scale Research Infrastructures
Project acronym	CREMLIN
Grant agreement no.	654166
Instrument	Coordination and Support Action (CSA)
Duration	01/09/2015 – 30/08/2018
Website	<a href="http://www.cremlin.eu">www.cremlin.eu</a>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 654166.



*EC Grant Agreement No. 654166  
Project duration: 1.9.2015-31.08.2018*

## **CREMLIN WP5 Workshop on mapping demands of Russian and European photon science communities**

**22-23 November 2016**

**VDNKh, Moscow**



**Photo: Ekaterina Kolesnikova, NRC “Kurchatov Institute”**

## **CREMLIN WP5 Workshop on mapping demands of Russian and European photon science communities**

From 21 to 26 November 2016 the first Russian Crystallographic Congress "From convergence of sciences to the nature inspired technologies" took place in Moscow and gathered more than a thousand Russian and foreign scientists - crystallographers, biologists, specialists in the field of materials science, nanotechnology, as well as scientists working in the field of medicine and humanitarian disciplines. Within the Congress the CREMLIN «Workshop on mapping demands of Russian and European photon science communities» dedicated to the advanced methods of research with the use of synchrotron and neutron radiation was organized.

The Aide to the President of the Russian Federation Fursenko A.A. and Deputy Minister of Science and Education of the Russian Federation Povalko A.B. made welcoming statements noting the necessity of the development of science and education on the basis of a convergent approach and the importance of interdisciplinary studies. Furthermore the Head of the EU Delegation to Russia V. Ušackas and Research and Innovation Councilor of the EU Delegation to Russia R. Burger participated in the Congress Opening Ceremony. They confirmed the interest of the European Commission in continuation of joint activities in the framework of Megaprojects, and gave a positive assessment of the CREMLIN project, which indicated the possibility of continuing the work in this field.

On the initiative of the President of the National Research Centre "Kurchatov Institute" Kovalchuk M.V. the joint extended meeting of the interdepartmental working groups of the Presidential Council for Science and Education on "Infrastructure of scientific research" and "Interdisciplinary research". These working groups consist of heads of institutions which are users of large research infrastructures. During the meeting, participants confirmed the further development of scientific and technological cooperation with Europe, which continues to be a priority and an integral part of the overall strategy for the development of scientific research in the framework of international cooperation of the Russian Federation.

The main topic of the Workshop was the development of synchrotron radiation sources of the 4<sup>th</sup> generation. Within the Workshop a Round table «Russian next-generation synchrotron radiation source SSRS-4" was organized with the main task to discuss the technological prospects of a new facility, definition of scientific problems and research methods. The representatives of the leading research centers including F. Sette (ESRF), H. Reichert (ESRF), O. Seeck (DESY) took part in this Workshop.

Several presentations on the 4<sup>th</sup> generation sources were made: Logatchev P.V. (Budker INP), Rychev M.V. (European XFEL), Korchuganov V.N. (NRC KI). The co-chair of the Round table Prof. H. Reichert noted that the Workshop with

its focus on X-ray and Neutron science attracted a large number of participants and was a clear demonstration of the interest of the Russian scientific community in large scale facilities providing high quality X-ray and Neutron beams. He underlined that it was particularly enlightening to meet a generation of young Russian scientist producing high quality science on an international level and that the realization of a 4th generation light source in Russia would provide the means to greatly enhance the impact of Russian science. It could also provide a most attractive environment for the next generation of scientists in Russia.

The scientists from the leading research institutes and universities which are members of the National scientific and educational research association "Research large-scale facilities for the Megascience projects" also made presentations within the Round table. The participants of the Round table presented certain scientific problems in areas such as X-ray spectroscopy, structural biology, small-angle scattering, coherent imaging, comprehensive solution of which is feasible only with the use of capacities of the new generation of synchrotron radiation source.

At the end of the Workshop participants came to the following conclusions:

- creation of a source of the next generation synchrotron radiation is of great interest for both Russian and international scientific communities;
- as part of the work on the creation of synchrotron radiation source the key tasks are the preparation of design project of the facility and Russian user community;
- at present NRC «Kurchatov Institute» is completing the formation of a working group on the creation of conceptual design project of SSRS-4 with the participation of the leading Russian (BINP) and European specialists (DESY, XFEL, ESRF, MAX-IV);
- It is expected the construction of synchrotron facilities of a smaller scale in the most important research clusters of the Russian Federation, such as the Far East, Siberia, the Northwestern region, and others in order to develop the photonic research.

## Participants of the CREMLIN WS:

1. Alekseeva O.A. FSRC «Crystallography and Photonics» RAS
2. Blagov A.E. NRC «Kurchatov Institute»
3. Brunkov P.N. Ioffe Institute
4. Capria E. ESRF
5. Chenevier D. ESRF
6. Domashevskaya E.P. Voronezh State University
7. Dyakova Yu. FSRC «Crystallography and Photonics» RAS
8. Eliovich Y. FSRC «Crystallography and Photonics» RAS
9. Goikhman A.Yu. Immanuel Kant Baltic Federal University
10. Grigoriev S.V. PNPI NRC «Kurchatov Institute»
11. Ivanov S.N. NRC «Kurchatov Institute»
12. Kamenskih I.A. Lomonosov MSU
13. Kolesnikova E.A. NRC «Kurchatov Institute»
14. Korchuganov V. N. NRC «Kurchatov Institute»
15. Kovalchuk M.V. NRC «Kurchatov Institute»
16. Kravchuk V.L. NRC «Kurchatov Institute»
17. Kulda J. ILL
18. Kurskii A. FSRC «Crystallography and Photonics» RAS
19. Kvardakov V.V. RFBR
20. Logachev P. V. BINP
21. Marchenkov N.V. NRC «Kurchatov Institute»
22. Mazurenko S.N. Presidential Council for Science and Education
23. Menushenkov A.P. MEPhI
24. Mezentsev N. BINP
25. Mishin A.V. MIPT
26. Molodtsov S. European XFEL
27. Naraykin O. S. NRC «Kurchatov Institute»
28. Novikov D.V. DESY
29. Pashaev E.M. NRC «Kurchatov Institute»
30. Petrov A.A. NRC «Kurchatov Institute»
31. Popov M.V. NRC «Kurchatov Institute»
32. Prosekov P. A. FSRC «Crystallography and Photonics» RAS
33. Reichert H. ESRF
34. Rogachev A.V. MIPT
35. Rogalev A.L. ESRF
36. Rychev M.V. European XFEL
37. Salikhov S.V. Ministry of Science and Education
38. Samoylova L.V. DESY
39. Samygina V.R. FSRC «Crystallography and Photonics» RAS
40. Seeck O. DESY
41. Senin R.A. NRC «Kurchatov Institute»
42. Sette F. ESRF

43. Shaitan K. V.	Lomonosov MSU
44. Shtrombakh Ya. I.	NRC «Kurchatov Institute»
45. Shtykova E. V.	FSRC «Crystallography and Photonics» RAS
46. Snigirev A. A.	ESRF
47. Snigireva I.	ESRF
48. Soldatov A. V.	Southern Federal University
49. Targonskii A. V.	FSRC «Crystallography and Photonics» RAS
50. Tereschenko E. Yu.	FSRC «Crystallography and Photonics» RAS
51. Turin N.	IHEP NRC «Kurchatov Institute»
52. Usachev D. Yu.	Saint Petersburg University
53. Vartaniants I. A.	DESY
54. Veligzhanin A. A.	NRC «Kurchatov Institute»
55. Vinokurov N. A.	Novosibirsk State University
56. Yakunin S. N.	FSRC «Crystallography and Photonics» RAS
57. Yatsishina E. B.	NRC «Kurchatov Institute»
58. Zenkevich A. V.	MIPT
59. Zolotarev K.	BINP

# Program of First Russian Crystallographic Congress



21 – 26 November 2016

Moscow

## 21 November, Monday

**9:00-11:00 Registration**

**11:00-11:45 Opening ceremony**

**11:45-12:45 M. Kovalchuk** *«Crystallography as the methodology of interdisciplinary science of the XXI century»*

**12:45-14:30 Lunch**

**14:30-15:15 V. Panchenko** *«Additive technology is the nature-like way for material creation*

**15:15-16:00 V. Popov** *«To see is meaning to understand. From the spatial structure to the biological function»*

**16:00–18:00 Party**



## 22 November, Tuesday

9:30-10:00 Poster session 1 preparation

10:00-10:45 «Kurchatov synchrotron-neutron complex. From crystallography to nature-like technology» Blagov A.

10:45-11:30 «Nuclear reactors in Russia: from F-1 to PIK» Shtrombah Ya.

11:30-12:00 Coffee-break

Great hall	Room 2	Room 3	Room 4	Room 5	Room 6
<p><b>12:00-14:05</b> SECTION 1. <i>Modern crystallography.</i> Session 1. <i>Mineralogy</i></p>	<p><b>12:00-14:30</b> <b>MICROSYMPOSIUM 8.</b> <i>Megascience. Current state and future. Russian dimension.</i> <b>12:00-13:15 Session 1.</b> <i>Neutron sources</i> <b>13:15-14:30 Session 2.</b> <i>Accelerators engineering and technologies in Russia</i></p>	<p><b>12:00-14:00</b> SECTION 2. <i>Techniques and equipment for structural research.</i> Session 1. <i>Small-angle scattering</i></p>	<p><b>12:00-13:50</b> SECTION 3. <i>Crystallography in biology and medicine.</i> Session 1. <i>Biom mineralization</i></p>	<p><b>12:00-14:05</b> <b>MICROSYMPOSIUM 2.</b> <i>Superconducting materials and structures.</i></p>	<p><b>12:00-13:55</b> <b>MICROSYMPOSIUM 1.</b> <i>Photoactive materials and photovoltaic structures.</i></p>

14:00-15:30 Lunch

14:00-17:30 Tour to NRC Kurchatov Institute

<p><b>15:30-16:55</b> SECTION 1. <i>Modern crystallography.</i> Session 2. <i>Nanosystems and nanocrystals</i></p>	<p><b>15:30-17:50</b> <b>MICROSYMPOSIUM 8.</b> <i>Megascience. Current state and future. Russian dimension.</i> Session 3. <i>Synchrotron radiation sources</i></p>	<p><b>15:30-17:00</b> SECTION 2. <i>Techniques and equipment for structural research.</i> Session 2. <i>Materials structural characterization</i></p>	<p><b>15:20-17:00</b> SECTION 3. <i>Crystallography in biology and medicine.</i> Session 2. <i>Small-angle scattering</i></p>	<p><b>15:30-16:30</b> <b>MICROSYMPOSIUM 2.</b> <i>Superconducting materials and structures.</i></p>	<p><b>15:30-17:10</b> <b>MICROSYMPOSIUM 1.</b> <i>Photoactive materials and photovoltaic structures.</i></p>
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17:00-17:20 Coffee-break

<p><b>17:20-18:50</b> SECTION 1. <i>Modern crystallography.</i> Session 2. <i>Nanosystems and nanocrystals (continuation).</i></p>	<p><b>18:10-19:30</b> <b>MICROSYMPOSIUM 8.</b> <i>Megascience. Current state and future. Russian dimension.</i> Session 4. <i>Russian megascience. International dimension.</i></p>	<p><b>17:20-18:35</b> SECTION 2. <i>Techniques and equipment for structural research.</i> Session 2. <i>Materials structural characterization (continuation).</i></p>	<p><b>17:20-19:15</b> SECTION 3. <i>Crystallography in biology and medicine.</i> Session 3. <i>Nanoparticles and films</i></p>
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19:00-20:30 Hall. Poster session 1.

## 23 November, Wednesday

09:00-09:30 Poster session 2 preparation

09:30-09:45 Award ceremony of Yury Struchkov Prize.

09:45-10:30 «Structural design of materials for electrochemical power.» Antipov E.

10:30-11:15 «Neural Network Artificial Intelligence.» Demin V.

11:15-12:00 «Energy storage for molecular machines and bionic devices.» Vasilov R.

12:00-12:20 Coffee-break

Great hall	Room 2	Room 3	Room 4	Room 5	Room 6
12:20-14:15 SECTION 1. <i>Modern crystallography. Session 3. Theoretical crystallography.</i>	12:20-14:20 MICROSYMPOSIUM 8. <i>Megascience. Current state and future. Russian dimension. Round table: «Modern techniques for research using the synchrotron radiation»</i>	12:20-14:30 SECTION 3. <i>Crystallography in biology and medicine. Session 4. Structural biology</i>	12:20-14:15 SECTION 4. <i>Crystallography and cognitive research. Session 1.</i>	12:20-14:20 MICROSYMPOSIUM 4. <i>Ceramics, composites and hybrid materials. Session 1.</i>	12:20-14:20 SECTION 2. <i>Techniques and equipment for structural research. Session 3. Electron microscopy and electronography</i>

14.20-15.30 Lunch

14.00-17.30 Tour to NRC Kurchatov Institute

15:30-16:55 SECTION 1. <i>Modern crystallography. Session 4. Structure of inorganic materials</i>	15:20-17:20 MICROSYMPOSIUM 8. <i>Megascience. Current state and future. Russian dimension. Round table (continuation).</i>	15:30-17:00 SECTION 3. <i>Crystallography in biology and medicine. Session 4. Structural biology (continuation).</i>	15:30-16:55 SECTION 4. <i>Crystallography and cognitive research. Session 2.</i>	15:30-17:00 MICROSYMPOSIUM 4. <i>Ceramics, composites and hybrid materials. Session 2.</i>	15:30-17:00 SECTION 2. <i>Techniques and equipment for structural research. Session 3. Electron microscopy and electronography (continuation).</i>
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17:00-17:20 Coffee-break

17:20-18:50 SECTION 1 <i>Modern crystallography Session 4. Structure of inorganic materials (continuation).</i>	17:40-19:00 MICROSYMPOSIUM 8. <i>Megascience. Current state and future. Russian dimension. Round table (continuation).</i>	17:20-19:10 SECTION 3. <i>Crystallography in biology and medicine. Session 4. Structural biology (continuation).</i>	17:20-18:20 SECTION 4. <i>Crystallography and cognitive research. Session 2. (continuation)</i>	17:20-18:50 MICROSYMPOSIUM 4. <i>Ceramics, composites and hybrid materials. Session 2 (continuation).</i>	17:20-18:50 SECTION 2. <i>Techniques and equipment for structural research. Session 4. Neutron crystallography</i>
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**19.00-20.30 Hall. *Poster session 2.***

## 24 November, Thursday

10:00-10:45 «Archaeological ancient of Russia as an object for interdisciplinary researches» Makarov N.

10:45-11:30 «Neuroscience and the Humanities» Chernigovskaya T.

11:30-12:00 Coffee-break

Great hall	Room 2	Room 3	Room 4	Room 5	Room 6
<b>12:00-13:50</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 5.</i> <i>Structure of the organic and molecular crystals</i>	<b>12:00-14:00</b> <b>SECTION 2.</b> <i>Techniques and equipment for structural research.</i> <i>Session 5.</i> <i>Techniques</i>	<b>12:00-14:10</b> <b>SECTION 3.</b> <i>Crystallography in biology and medicine.</i> <i>Session 5.</i> <i>Modelling of the bioorganic structure</i>	<b>12:00-14:15</b> <b>SECTION 5.</b> <i>Crystallography methods in the humanities</i> <i>Session 1.</i> <i>Researches of metal artefacts</i>	<b>12:00-14:15</b> <b>MICROSYMPOSIUM 4.</b> <i>Ceramics, composites and hybrid materials.</i> <i>Session 3.</i>	<b>12:00-14:00</b> <b>MICROSYMPOSIUM 7.</b> <i>Metamaterials and photonic crystals.</i>

14:00-15:30 Lunch

14:00-17:30 Tour to NRC Kurchatov Institute

<b>15:30-17:10</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 6.</i> <i>Superionic and organic conductors and semiconductors</i>	<b>15:30-17:00</b> <b>SECTION 2.</b> <i>Techniques and equipment for structural research.</i> <i>Session 5. Techniques (continuation).</i>	<b>15:30-17:00</b> <b>SECTION 3.</b> <i>Crystallography in biology and medicine.</i> <i>Session 6.</i> <i>Macromolecule crystallisation and X-ray structural analysis</i>	<b>15:30-17:35</b> <b>SECTION 5.</b> <i>Crystallography methods in the humanities</i> <i>Session 2.</i> <i>Researches of organic artefacts, ceramics and pigments</i>	<b>15:30-17:05</b> <b>MICROSYMPOSIUM 3.</b> <i>Structural approach for additive technologies</i>	<b>15:30-16:45</b> <b>MICROSYMPOSIUM 7.</b> <i>Metamaterials and photonic crystals.</i>
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17:00-17:20 Coffee-break

<b>17:30-19:05</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 7.</i> <i>Structural and electronic transitions at extreme conditions</i>	<b>17:20-19:05</b> <b>SECTION 2.</b> <i>Techniques and equipment for structural research.</i> <i>Session 5.</i> <i>Techniques (continuation)</i>	<b>17:20-18:40</b> <b>SECTION 3.</b> <i>Crystallography in biology and medicine.</i> <i>Session 7.</i> <i>XFEL for structural biology</i>	<b>17:25-18:10</b> <b>MICROSYMPOSIUM 3.</b> <i>Structural approach for additive technologies</i>
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19:30-22:30 Dinner

## 25 November, Friday

10:00-10:45 « *Natural nanocomposites. Learning from nature.* » Chvalun S.

10:45-11:30 « *Defects in the inorganic and bio-organic crystals: similarities and differences* » Voloshin A.

11:30-12:00 Coffee-break

Great hall	Room 2	Room 3	Room 4	Room 5	Room 6
<b>12:00-14:05</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 8.</i> <i>Material science in space</i>	<b>12:00-14:00</b> <b>SECTION 2.</b> <i>Techniques and equipment</i> <i>for structural research.</i> <i>Session 6.</i> <i>Equipment</i>	<b>12:00-14:00</b> <b>SECTION 3.</b> <i>Crystallography in biology</i> <i>and medicine.</i> <i>Session 8.</i> <i>Structural research of bio-</i> <i>objects</i>	<b>12:00-14:05</b> <b>SECTION 6.</b> <i>Modern crystallography</i> <i>training</i> <i>Session 1.</i>	<b>12:00-14:00</b> <b>MICROSYMPOSIUM 6.</b> <i>Materials for detectors and</i> <i>sensors</i> <i>Session 1.</i>	<b>12:00-14:10</b> <b>MICROSYMPOSIUM 5.</b> <i>Chemical- and radiation-</i> <i>resistant materials</i>

14:00-15:30 Lunch

14:00-17:30 Tour to NRC Kurchatov Institute

<b>15:30-16:55</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 9.</i> <i>Monocrystals growth</i>	<b>15:30-17:00</b> <b>SECTION 2.</b> <i>Techniques and equipment</i> <i>for structural research.</i> <i>Session 6.</i> <i>Equipment (continuation).</i>	<b>15:30-17:00</b> <b>SECTION 3.</b> <i>Crystallography in biology</i> <i>and medicine.</i> <i>Session 8.</i> <i>Structural research of bio-</i> <i>objects (continuation).</i>	<b>15:30-17:00</b> <b>SECTION 6.</b> <i>Modern crystallography</i> <i>training</i> <i>Session 2.</i>	<b>15:30-17:00</b> <b>MICROSYMPOSIUM 6.</b> <i>Materials for detectors and</i> <i>sensors</i> <i>Session 2.</i>
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17:00-17:20 Coffee-break

<b>17:20-18:20</b> <b>SECTION 1.</b> <i>Modern crystallography.</i> <i>Session 10.</i> <i>Mechanical properties</i> <i>of the crystals</i>	<b>17:20-18:20</b> <b>SECTION 2.</b> <i>Techniques and equipment</i> <i>for structural research.</i> <i>Session 6.</i> <i>Equipment (continuation).</i>	<b>17:20-18:05</b> <b>SECTION 6.</b> <i>Modern crystallography</i> <i>training</i> <i>Session 2.</i> <i>(continuation).</i>	<b>17:20-18:35</b> <b>MICROSYMPOSIUM 6.</b> <i>Materials for detectors and</i> <i>sensors</i> <i>Session 2 (continuation).</i>
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18:20-18:40 Coffee-break.

18:40-19:00 Great hall. *Awards ceremony for best poster of young scientists*

19:00-19:30 Great hall. *Closing ceremony*

## **EXHIBITION OF SCIENTIFIC EQUIPMENT, INNOVATION AND DEVELOPMENT**

PLACE:

hall, sector C,  
75th Pavilion Exhibition Centre VDNKh, Moscow.  
From 21 to 23 November.  
9:30 – 20:30

EXHIBITORS:

NRC Kurchatov Institute  
FSRC "Crystallography and photonics" RAS  
Rosatom State Nuclear Energy Corporation  
OPTEK  
TechnoInfo

### **TOURS TO NRC KURCHATOV INSTITUTE**

For Congress participants tours in National Research Center "Kurchatov Institute" will be organized to familiarize themselves with its research and technology infrastructure.

Participants will visit the complex of the Kurchatov synchrotron, neutron research, the resource centers, where they will receive detailed information on how to apply for research of the unique experimental facilities NRC "Kurchatov Institute".

Tours will be held every day from 22 to 25 November. Buses to the NRC "Kurchatov Institute" will departure from the main entrance of the 75th pavilion of VDNKh 14.00. A light lunch on the way up from VDNKh to NRC "Kurchatov Institute" will be provided to participants of excursions. After the tour it will be able to return by the bus to VDNKh.



## 22 November, Tuesday

**10:00 – 11:30**

### **PLENARY TALKS**

*Co-chair: Mazurenko S., Naraykin O.*

- 10:00 10:45 Blagov A. Kurchatov synchrotron-neutron complex. From crystallography to nature-like technology.  
10:45 11:30 Shtrombah Ya. Nuclear reactors in Russia: from F-1 to PIK.

*11:30-12:00 Coffee-break*

### **12:00 – 19:30 MICROSYMPOSIUM 8. MEGASCIENCE. CURRENT STATE AND FUTURE. RUSSIAN DIMENSION.**

**12:00 – 13:15 Session 1. Neutron sources.**

*Co-chair: Kovalchuk M., Shtrombah Ya.*

- 12:00 – 12:30 General speaker: Kurskii A.  
12:30 – 13:15 Co-speakers: representatives of the Russian Neutron source centres.

**13:15 - 14:30 Session 2. Accelerators engineering and technologies in Russia.**

*Co-chair: Kovalchuk M., Ivanov S.*

- 13:15 – 13:45 General speaker: Turin N.  
13:45 – 14:30 Co-speakers: representatives of the Russian accelerator centres.

*14:30 - 15:30 Lunch*

**15:30 – 17:50 Session 3. Synchrotron radiation sources.**

*Co-chair: Kovalchuk M., Mazurenko S.*

- 15:30 – 15:50 Kvardakov V. «KSRS – Kurchatov».  
15:50 – 16:10 Mazurenko S. Technological storage ring complex (Zelenograd).  
16:10 – 16:30 Logachev P. Budker Institute of Nuclear Physics.  
16:30 – 16:50 Korchuganov V. Problems of the accelerators of synchrotron radiation source and their solution.  
16:50 – 17:10 Zolotarev K. Project of the modern synchrotron radiation source.  
17:10 – 17:30 Vinokurov N. Free electron lasers.  
17:30 – 17:50 Mezentsev N. Wigglers and undulators. Present view.

*17:50-18:10 Coffee-break*

**18:10 – 19:30 Session 4. Russian megascience. International dimation.**

*Co-chair: Kovalchuk M., Salikhov A.*

- 18:10 – 18:30 Rychev M. Russia in the international megaprojects.  
18:30 – 18:50 Sette F. European synchrotron radiation sources (*invited*).  
18:50 – 19:10 Reichert H. European SR source ESRF – present status, perspectives and application fields.  
19:10 – 19:30 Seeck O. Status and future development of SR source DESY (PETRA III–PETRA IV)

## 23 November, Wednesday

**09:30 – 12:00**

### **PLENARY TALKS**

*Co-chair: Velichkovskii B., Chvalun S.*

- 09:30 – 09:45 Award ceremony of Yury Struchkov Prize.  
09:45 – 10:30 Antipov E. Structural design of materials for electrochemical power.  
10:30 – 11:15 Demin V. Neural Network Artificial Intelligence.  
11:15 – 12:00 Vasilov R. Energy storage for molecular machines and bionic devices.

*12.00-12.20 Coffee-break*

### **12:20 – 19:00 MICROSYMPOSIUM 8. MEGASCIENCE. CURRENT STATE AND FUTURE. RUSSIAN DIMENSION.**

**12:20 14:20 Round table: «Modern techniques for research using the synchrotron radiation».**

*Moderators: Alekseeva O., Blagov A.*

- 12:20 – 12:35 Novikov D. Russian-German nanodiffraction beamline at PETRA III.  
12:35 – 12:50 Boldyreva E. Modern application and trends of the diffraction researches at extremal conditions – high pressure, high and low temperature, processes in situ, materials and devices in operando.  
12:50 – 13:05 Rogalev A. Polarized X-ray spectroscopy.  
13:05 – 13:20 Shtykova E. Small-angle X-ray scattering.  
13:20 – 13:35 Veligzhanin A. Review of spectroscopic studies of NRC Kurchatov institute.  
13:35 – 13:50 Domashevskaya E. The experience of SR using for atomic and electron structure researches of the multifunctional nanostructures in Voronezh State University.  
13:50 – 14:05 Usachev D. The using of SR in graphene study.  
14:05 – 14:20 Shaitan K. Molecular modelling and problem of the inverse task solution of the scattering on the irregularity biological objects in FEL experiments.

*14:20-15:20 Lunch*

**15:20 19:00 Round table: «Modern techniques for research using the synchrotron radiation» (continuation).**

*Moderators: Reichert H., Popov M.*

- 15:20 – 15:35 Soldatov A. 3D pikometer characterization of local atomic structure of the materials without long-range order.  
15:35 – 15:50 Goikhman A. Portable growth modules for in-situ forming and research of the unique nanostructures and systems at the modern synchrotron radiation sources.  
15:50 – 16:05 Samoylova L. Single crystal optics at high repetition rate x-ray free electron lasers.  
16:05 – 16:20 Mishin A. Membrane protein structural biology using new generation of synchrotron radiation sources.  
16:20 – 16:35 Zenkevich A. The study of chemical, electron and magnetic properties of the interfaces in nanoelectronic and spintronic functional structures using SR sources.  
16:35 – 16:50 Brunkov P. Research of new functional nanomaterials by techniques complex with high spatial, energy and time resolution.



16:50 – 17:05 Menushenkov A.P. Research program of MEPHI using the SR.

17:05 – 17:20 Kamenskikh I.A. Spectroscopic researches in MSU.

*17:20-17:40 Coffee-break*

17:40 – 17:55 Vartanians I. Coherent imaging at the SR sources and FEL.

17:55 – 18:10 Snigirev A. Coherent X-ray refractive optics for new diffraction limited X-ray sources.

18:10 – 19:00 General discussion.