

**I. Preamble**

The Chairperson of the PAC, V. Kantser, welcomed the PAC members, in particular the new member G. Eckold, and the ex-officio members from JINR, and presented the implementation of the recommendations of the previous PAC meeting.

JINR Vice-Director R. Lednický informed the PAC about the Resolution of the 104th session of the Scientific Council (September 2008), the decisions of the Committee of Plenipotentiaries (November 2008), and about the first step of preparation of the Seven-Year Plan for the Development of JINR for 2010–2016.

The PAC took note of the report, presented by A. Ruzaev, about the current status of the International Innovation Centre for Nanotechnology of the CIS countries and planned activities in its near future perspective. The PAC needs more information from the JINR Directorate about the interest and implication of JINR in such a Nano Centre. The PAC considers it appropriate to use the opportunity of JINR as an international centre founded, in particular by CIS countries, to accelerate the start-up of the activity of the Centre for Nanotechnology.

The PAC members appreciated the visit to the Flerov Laboratory of Nuclear Reactions and the explanations given by P. Apel, and recommends continuation in the future of the positive practice of visiting JINR laboratories.

**II. Status of modernization of the IBR-2 reactor**

The PAC was informed by A. Vinogradov about the progress of the IBR-2 modernization and is pleased to note that this work is proceeding well and according to the schedule, even if the delivery of the reactor vessel was delayed. The PAC supports the reported plan concerning the technical work and the financing for 2009. The PAC considers it necessary to actively continue the FLNP work on the stage-by-stage realization of the project of cryogenic moderators.

As 2009 is the last year before the reactor start-up, the PAC emphasizes that timely and full financing of the work according to the schedule is of crucial importance for the successful completion of the reactor modernization and expects that comprehensive support of the modernization programme by the FLNP and JINR directorates will be continued.

### **III. FLNP instrument user policy**

The PAC took note of the report on the general guidelines of the user programme for the spectrometers complex of IBR-2M, presented by D. Kozlenko. The IBR-2M reactor will be the most powerful neutron source in the JINR Member States and therefore the user programme will remain an important part of the FLNP activity. It provides wide opportunities to scientists from Member States and other countries to perform collaborative research on nanosystems, novel materials and various most advanced studies in condensed matter physics at the spectrometers complex of IBR-2M. The realization of the user programme in future will require an increase of the international cooperation budget of the FLNP relevant scientific themes of FLNP after the IBR-2M start-up, which was decreased gradually in the last years due to IBR-2 shut-down. It is essential for the realization of the user programme that the spectrometer complex should be made operational before the start-up of IBR-2M.

The PAC suggests that the FLNP Directorate ensure that information about the commissioning of all the spectrometer facilities is discussed well in advance in appropriate forms (Web, conferences, etc.).

### **IV. Status of the spectrometer projects: GRAINS, EPSILON-MDS and SKAT**

The PAC was informed by M. Avdeev about the status of the GRAINS project on the construction of a new multifunctional reflectometer with horizontal sample plane at channel 10 of the IBR-2M reactor. The PAC appreciates the reported progress in the project realization and notes that for the successful start-up of the first instrument configuration in 2011 the funding should be provided in accordance with the presented plan. The PAC noted with interest the report by Ch. Scheffzuek on the modernization of the former beam line 7A at the IBR-2M for the diffractometers EPSILON-MDS and SKAT. The talk attested the progress of the work as scheduled. The PAC is aware that the project is under the common financing of BMBF (Germany) and FLNP. The PAC expects that future financing will guarantee the successful completion of the instrument.

The PAC considers it necessary to elaborate the plan of modernization and updating of the complex of spectrometer facilities, regarding this as the second important stage in the many years' activities of the modernization of IBR-2M-based equipments for modern condensed matter physics neutron investigations. The PAC recommends to use as the basis of the plan the first priorities in the development of spectrometers for the IBR-2M reactor — DN-6, GRAINS, SKAT/EPSILON, which were approved at the PAC previous meeting in June 2008.

Moreover, the PAC considers it important to provide all the existing spectrometers with the necessary resources to allow reliable user operation at the start-up of the reactor.

For its next session the PAC wishes to hear a report about the readiness of the whole park of FLNP spectrometers at the time of IBR-2M start-up. The PAC encourages the management of the spectrometers to get grants and use them to achieve some upgrades of spectrometers.

## **V. Scientific reports**

The PAC heard with interest the scientific reports: “Study of the mitochondrial membrane structure by small-angle neutron scattering”, presented by T. Murugova, “New approach to the strongly correlated electron systems”, presented by E. Kochetov, “In situ and postradiation analysis of mechanical stress in alumina induced by swift heavy ion irradiation”, presented by V. Skuratov, and “Mathematical modeling of mutational process in bacterial cells under ultraviolet irradiation”, presented by O Belov.

## **VI. Poster presentations**

The PAC was impressed by the poster presentations by LRB young scientists in the various aspects of radiation biology, including modeling of the mutation process in bacterial cells, investigation of apoptosis in mammalian and human cells, and also in the fields of dosimetry and biological shielding, and recommends these materials for presentation on the web-portal of JINR.

The PAC appreciates very much the increased number of high-quality scientific reports and poster presentations and recommends that these activities be continued.

## **VII. Proposals of the Laboratories and UC into the Plan for the Development of JINR for 2010–2016**

### **FLNP**

The PAC supports the general lines of the seven-year programme for the development of condensed matter studies at the Frank Laboratory of Neutron Physics, presented by A. Belushkin. The IBR-2M reactor will be the main basic facility for the investigations in this field. The FLNP staff should concentrate efforts on the start-up of the complex of cryogenic moderators and on the development of modern spectrometers on their basis, and on the identification of new research areas compatible with new IBR-2M facilities.

### **BLTP**

The PAC supports the plan of theoretical investigations at the Bogoliubov Laboratory of Theoretical Physics, presented by V. Priezzhev, which includes studies of physical properties of complex materials such as layered copper oxides, oxides of transition metals, geometrically frustrated anti-ferromagnetic materials and nanostructures: fullerenes, nanotubes and dendrimers.

### **LRB**

The PAC appreciates the scientific novelty and relevance to the general objectives of JINR of the conceptual proposals of the Laboratory of Radiation Biology, presented by E. Krasavin. The PAC stresses the significance of the radiobiological investigations conducted at LRB and supports the main directions of the long-term programme for the radiobiological and radiation studies at the LRB.

The PAC notes with satisfaction the acquisition by JINR of a confocal CARS microscope as JINR's interlaboratory instrument for research in the fields of biology, chemistry, nanotechnology, etc.

### **FLNR**

The PAC recognizes the quality of the proposed research activities of the Flerov Laboratory of Nuclear Reactions in the areas of condensed matter physics and nanomaterials, presented by P. Apel. The FLNR staff will focus on the upgrade of the existing accelerators (IC-100) and on the development of new dedicated accelerators for investigations in the field of materials modifications and nanotechnological applications. The Laboratory should continue its activity on the implantation-based synthesis of nanostructural materials, on the production of unique radioisotope, and on the track-membrane-based innovations.

### **UC**

The PAC supports the seven-year plan of the University Centre, presented by D. Fursaev, aimed at a considerable increase of the number of students from JINR Member States, in addition to students from the Russian Federation, to be trained at the UC and JINR laboratories. The inflow of the foreign students coming to Dubna should be ensured by creating a modern educational laboratory infrastructure, a system of module lecture courses, introducing bilateral postgraduate programmes and developing traditional as well as new international educational activities of the UC.

The PAC recommends that the proposals of these Laboratories and of the UC be included in the Seven-year plan for the development of JINR for 2010–2016.

### **VIII. Information about scientific meetings**

The PAC took note of the information about the Advanced Courses for CIS countries “Synchrotron and Neutron Studies of Nanosystems” (SYN-nano) (7–26 July 2008, Moscow–Dubna), presented by M. Avdeev, and about XX International Workshop on Neutron Scattering in Condensed Matter Investigations (NSCMI–2008) (13–19 October 2008, Gatchina), presented by A. Balagurov.

The PAC recommends the regular holding, once a year, courses or schools on nuclear physics aspects of nanotechnology with representation from all the JINR Member States.

ПКК рекомендует регулярно, раз в год, проводить курсы или школы по ядерно-физическим аспектам нанотехнологий с участием всех государств-членов ОИЯИ.

### **IX. Miscellaneous**

The PAC asks the JINR Directorate to appoint a new scientific secretary of the PAC for Condensed Matter Physics. The PAC thanks Professor S. Tyutyunnikov for his long and successful work as scientific secretary.

The PAC asks the directorates of JINR and of corresponding laboratories to prepare PAC materials in time (not later than one month before the meetings) and make them available in electronic form to all PAC members as well as to display them on the JINR Web site.

### **X. Next meeting of the PAC**

The next meeting of the PAC for Condensed Matter Physics will be held on 25–26 June 2009.

Its tentative agenda will include:

- Reports and recommendations on the projects and themes to be completed in 2009
- Status of modernization of the IBR-2 reactor
- Reports of current state of the modernization of FLNP instruments
- Plan of modernization and updating of the complex of spectrometer facilities for the near three-year period and long-term seven-year period
- Scientific reports
- Poster session.



V. Kantser  
Chairperson of the PAC