

## **Report of the Reviewer on the proposal for the extension of the theme “Investigations of Condensed Matter by Modern Neutron Scattering Methods”**

Theme leaders: D.P.Kozlenko, V.L.Aksenov and A.M.Balagurov

The considered scientific theme 04-4-1121-2015/2017 “Investigations of Condensed Matter by Modern Neutron Scattering Methods” was realized successfully at FLNP over last three years and being completed this year. During this period, many interesting scientific results related to structural, magnetic and dynamical properties of various condensed matter systems were obtained. These results were published in nearly 300 articles, and some of them – in leading scientific journals, like Nature Chemistry and Nature Communications, Physical Review B, Nano Research, etc., and presented in about 300 conference presentations. The high research quality is confirmed by JINR and international prizes attributed to selected research cases. The significant upgrade of the IBR-2 spectrometer complex, creation and development of new instruments, leading to the new research prospects, should be also appreciated.

The proposed research plan within the extended theme is interdisciplinary in character. It continues to be focused on the actual problems of the condensed matter physics, materials science, chemistry, biophysical and geophysical sciences, applied topics including neutron imaging and residual stress determination in different materials and products. The scientific research is concentrated on studies of crystal and magnetic structure, dynamics and properties of various functional materials, nanosystems, biological systems, polymers, constructional materials, rocks and minerals and expected results will be of significant importance for the considered research directions. The spectrometer complex of the IBR-2 high flux pulsed reactor will be naturally used as the experimental base. The scientific research will be performed in cooperation with other JINR Laboratories, LIT, BLTP, LRB, FLNR, VBLHE and numerous (order of a hundred) organizations from JINR Member States and other countries. The important addition to the planned scientific activities is the User Programme, which has been realized successfully during the last years.

A special attention within the extended theme is given to further upgrade of the IBR-2 spectrometer complex. A creation of new instruments, modernization of existing instruments and development of prospective neutron scattering techniques are planned. The timescale planning of the proposed activities is reliable. All these activities will ensure the ongoing development of the IBR-2 spectrometer complex to keep it at comparable level to other world leading neutron centers. The requested financial resources are reasonable with respect to proposed activities.

The proposed theme will be realized basically in the Department of Neutron Scattering Investigations of Condensed Matter of FLNP. The staff of the Department is well known in neutron scattering community as highly qualified professionals, very active in the field. Their experience is supported by large number of publications in distinguished scientific journals and conference reports, awards and prizes of different level. Large number of young scientists and specialists from JINR Member States ensures positive dynamics in future Department development.

Concluding, I endorse the extension of the theme “Investigations of Condensed Matter by Modern Neutron Scattering Methods” and recommend its realization at JINR for the period of three years with the first priority.



P.A. Alekseev,

Doctor of Science, NRC “Kurchatov Institute”

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