

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

During 2015-2017, the activities under the theme 04-4-1121-2015/2017 “Investigations of Condensed Matter by Modern Neutron Scattering Methods” were performed at FLNP JINR. The scientific programme was targeted on the contemporary topics of the condensed matter research. The results received under programme implementation are of considerable value and have world competitive level of research quality. This is confirmed by impressive list of more than 300 published scientific articles, including those in top scientific journals (Nature Chemistry, Nature Communications, Scientific Reports by Nature Publishing Group, Physical Review B, etc.), and about 300 conference presentations. The selected results were recognized by the First JINR Prizes and Award of the Romanian Academy of Science. Significant efforts were made for the upgrade of the IBR-2 spectrometer complex, leading also to increased number of spectrometers.

The plan of the activities within the extended theme is based on the previous research advances and provides a logical continuation of the research programme with the focus on the actual fundamental and applied studies of structural, dynamical and other physical properties of advanced functional and constructional materials, nanoobjects, soft condensed matter, non-destructive control and neutron tomography and radiography of bulk materials and products. The scientific experiments will mostly be made at the home experimental base - spectrometer complex of the IBR-2 high flux reactor. The broad cooperation with numerous research organizations from JINR Member and Associated Member States, as well as other Laboratories of JINR will be continued. The important addition to the scientific research programme is the User Programme, providing wide prospects for further extension of the research cooperation.

The planned activities of the upgrade of the IBR-2 spectrometer complex constitute of the modernization of the operational spectrometers and also development of new instruments and neutron scattering techniques. Realization of these activities enables supporting the IBR-2 spectrometer complex at the competitive level among the other advanced neutron centers in the world and this is in line with the trends in development of neutron instrumentation. The proposed schedule of the methodical activities and requested financial sources are adequately formulated.

The activities of the extended theme will be performed mostly in the Department of Neutron Scattering Investigations of Condensed Matter of FLNP. The staff of the Department is sufficient and well skilled. It has a significant experience in all of the considered activities, which is supported by large list of publications in peer reviewed journals, conference reports, prizes and awards. The young scientists and specialists, including those from JINR Member States, are essential part of the Department staff.

Based on above, I strongly recommend to endorse the extension of the theme “Investigations of Condensed Matter by Modern Neutron Scattering Methods” for a period of 3 years with the first priority.

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Dr. Sci. V.A. Skuratov

Flerov Laboratory of Nuclear Reactions, JINR