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Date 2014.05.14  
Ref. \_\_\_\_\_

Review of the project

**'A system for neutron *operando* monitoring and diagnostics of materials and interfaces for electrochemical energy storage devices at the IBR-2 reactor'**

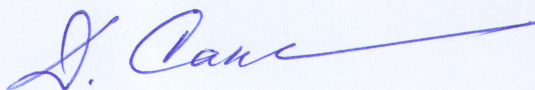
The project is devoted to the development of neutron scattering instrumentation at the IBR-2 pulsed reactor for studies in one of the most active research fields nowadays dealing with lithium-based electrochemical energy storage devices. At present, this is a very important and challenging task for research neutron centers working in the condensed matter physics to provide outside researchers with high-level experimental environment, which would make it possible to carry out complex experiments in various fields. Experiments with lithium-based electrochemical energy storage devices demand specialized equipment which will be designed and adopted to neutron scattering instruments including diffractometers, reflectometer and small-angle scattering setup at IBR-2 in the course of the project implementation. The scientific motivation of the project is well set. The development of new lithium-based electrochemical energy storage devices (batteries, accumulators) is of current interest. So, the expected results of the project are of high relevance for practical applications.

The project tasks in general are very suitable for neutron scattering techniques. Having high penetration depth neutrons allow one to carry out scattering experiments with systems which are very close in structure to real operating devices. This markedly distinguishes neutrons from other types of radiation like synchrotron radiation which requires rather elaborate experiment designs (often unachievable) to approach hidden electrodes and interfaces. Being highly competitive in this sense with synchrotron radiation sources, the proposed project motivates both the development of the neutron scattering methodology and the evolution of the User Program at IBR-2.

The project team is well balanced with respect to the representatives of various research and instrumentation fields involved. Besides JINR, the institutions which can provide professional support of electrochemical investigations and tests of specialized equipment take an active part in the project. One can state that the project team represents a unique combination, which seldom occurs in other neutron and synchrotron centers. An additional and very positive factor is the participation in the project of young researchers, which is rather important for the effective application of the developed instrumentation in the future.

I am in full support of the project and sure that its implementation will significantly contribute to the instrumentation development at the IBR-2 reactor. The project is totally thought through and justified regarding motivation, tasks, expecting results, manpower and costs. There is significant groundwork done which ensures its successful implementation according to the plan presented.

May 17, 2017

A handwritten signature in blue ink, appearing to read "J. Cane", with a long horizontal flourish extending to the right.

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