The report on
the theme “Radiation tolerance of materials to high intensity heavy ion beams impact” (1) and “Nanocomposite and functional track-etched membranes” (2)

(1) It is expected to get new knowledge concerning evolution of defect structure in nuclear ceramics under dense electronic excitations simulating the fission fragment impact.

Main approach to achieve goals of the project will be using of modern techniques for structural analysis - high resolution transmission electron microscopy in combination with molecular dynamic modelling of ion track formation processes.
Of particular interest is the radiation tolerance of nanosized materials to effects of high-energy heavy ions for by oxide dispersion strengthened (ODS) alloys.
Man power = 20
Total finance 875 000 USD
in particular: equipment, Third-party company services =550 000USD, International cooperation 150 000USD.

(2) Track-etched membranes (TMs) are an example of an industrial application of ion-track technology. TMs offer distinct advantages over conventional membranes due to their precisely determined structure.

The existing and future heavy-ion accelerator facilities at FLNR JINR offer unique opportunities for interdisciplinary research, especially for material science and nanotechnology.Applications of TMs in biotechnology and medicine are particularly important.

Project outcomes will include the implementation of new and elaboration of existing routes of membrane modification for the production of composite and hybrid TMs for targeted applications in Nanofluidics, sensing technologies, green energy harvesting, and biomedicine.

Human power = 25.5

Total estimated cost of the project 2 275 000 $.
In particular, resources requested (thousUSD): accelerator/installation, 1250.

The referee reports of Prof. Uglov (Theme 1) and Prof. Nikonenko (theme 2) both provides the analysis and estimation of the project value from different sides and finalized with strong support for its realization.

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