

Investigation of possibility of creation of radiation resistance sensors for physical information based on fiber materials

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The results of physical and material science and technological development of new materials of radiation photonics - nano- and microstructure of radiation-sensitive and radiation-resistant optical glass and fibers based on quartz are presented in the report. The possibility of their application in neutron diagnostics devices of nuclear power objects are considered. The option of the neutron detection based on hybrid fission chamber (with oxides ^{235}U , ^{238}U , ^{232}Th) with fiber-optic output optical signal in systems of control and protection of nuclear reactors is presented. Component and construction options for the radiation-sensitive fiber and glass materials (with isotopes ^{10}B , ^6Li , Gd, ions of Nd^{3+} , Ce^{3+} etc.), in which radiation resistance is achieved through the organization of areas of “drain” and annihilation of radiation-induced defects are considered.

Presentation type

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