RADIATION RESISTANCE OF BOROSILICATE GLASS TO BETA AND GAMMA RADIATION EVALUATED USING THE ACCELERATED PROTON METHOD

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Article received on February 06, 2021

Preservation of the main physical and chemical properties of vitrified high-level waste over a long-time period under the influence of heavy radiation exposure is considered as an essential criterion for its quality assessment used to demonstrate the safety of intermediate storage under controlled conditions and subsequent final disposal of the waste. Earlier calculations covering a time period of up to 10^4 years allowed to identify the maximum beta- and gamma-radiation induced dose loads for borosilicate glass (BSS) of a basic composition specifically designed to vitrify liquid HLW from ODC MCC [1]. This study evaluates potential feasibility of applying an accelerated proton beam to simulate radiation damage according to the type of beta-gamma effects produced on the BSS and investigates the consequences of such effects on its properties which is seen as a distinctive feature of this research.

Keywords: *radioactive waste, borosilicate glass, radiation resistance, computational modeling, absorbed dose, cyclotron.*

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Aloy A. S., Kovalev N. V., Prokoshin A. M., Karpovich, N. F., Koltsova T. I., Gorshkov N. G., Kalinin V. A., Blokhin A. I., Blokhin P. A., Dorofeev A. N. Radiation resistance of borosilicate glass to beta and gamma radiation evaluated using the accelerated proton method. *Radioactive Waste,* 2021, no. 1 (14), pp. 8—18. DOI: 10.25283/2587-9707-2021-1-8-18. (In Russian).