

HYDROGEN GENERATION AND ACCUMULATION IN STEEL AND GRAPHITE IRRADIATED IN INERT ENVIRONMENT

E Krasikov

National Research Centre, Kurchatov Institute, Russia

In traditional power engineering, hydrogen may be one of the first primary sources of equipment damage. This problem has high actuality for both nuclear and thermonuclear power engineering. Study of hydrogen embrittlement of the irradiated steel raises the question concerning the unknown source of hydrogen in nuclear reactors. Unexpectedly high hydrogen concentrations were detected in irradiated graphite also. Consequently alloying of steel and graphite by hydrogen in nuclear reactors takes place. It is necessary to look for this source of hydrogen especially because hydrogen flakes were detected in reactor pressure vessels of Belgian Nuclear Power Plants Doel-3 and Tihange-2. As a possible initial hypothesis about the enigmatical source of hydrogen one can propose protons (hydrogen) generation during beta-decay of free neutrons in as much as protons detected by research at nuclear reactors as witness of beta-decay of free neutrons.

ekrasikov@mail.ru