NUCLEAR ENERGY UNIVERSITY PROGRAMS

Removal of ^{14}C from Irradiated Graphite for Graphite Recycle and Waste Volume Reduction

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Initiative/Campaign: Gen IV/Materials

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Abstract

The project objective is to analyze and compare pre- and post-irradiation graphite to more definitively characterize the origin, location, and chemical form of carbon-14 in the irradiated material. To fulfill this objective, researchers will systematically characterize non-irradiated graphite with regard to its bulk isotopic and phase compositions, impurity concentrations, locations, and chemical form. Irradiated graphite will undergo analyses similar to the virgin material in addition to analyses designed to measure concentrations and locations of radionuclide impurities based on activity levels.

Six major grades and ten minor grades of graphite are being irradiated in this experiment. The major grades comprise H-451 (reference), IG-110 (reference), PCEA, NBG-18, NBG-17, and IG-430; the minor grades comprise NBG-25, PCIB, PPEA, NBG-10, BAN, HLM, PGX, S2020, HOPG, and A3 matrix.