Abstract:
The Cold Finger Apparatus (KühlFinger-Apparatur—KüFA) in operation at JRC-ITU is designed to experimentally scrutinize the effects of Depressurization LOss of Forced Circulation (D-LOFC) accident scenarios on irradiated High Temperature Reactor (HTR) fuel pebbles. Up to 1600 °C, the reference maximum temperature for these accidents, high-quality German HTR fuel pebbles have already demonstrated a small fission product release. This paper discusses and compares the releases obtained from KüFA-testing the pebbles HFR-K5/3 and HFR-EU1/3, which were both irradiated in the High Flux Reactor (HFR) in Petten. We present the time-dependent fractional release of the volatile fission product 137Cs as well as the fission gas 85Kr for both pebbles. For HFR-EU1/3 the isotopes 134Cs and 154Eu as well as the shorter-lived 110mAg have also been measured. A detailed description of the experimental setup and its accuracy is given. The data for the recently tested pebbles is discussed in the context of previous results.

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