

New devices designed and used to perform dissolutions in Atalante Hot Cells : Application to the oxide fuel dissolution

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In the frame of the back-end of the nuclear spent fuel, the shielded cells of ATALANTE facility which are called C11-C12, are dedicated to R&D studies on the high-activity chemistry of the dissolution of spent nuclear fuel and more generally to the issues of the first step of the PUREX process. The experimental programs carried out since the hot commissioning in 1999 have required permanent evolutions in the shielded line : new specific apparatus were designed to improve the dissolution step and ultimately the comprehension of this complex chemistry involving acidic solutions, newly formed or undissolved solids, and off-gases.

This equipment permits among other things studies on the following steps:

- Mechanical treatment before the dissolution of irradiated targets,
- Dissolution of the dissolution residues using strong media like fluorhydric acid or ozone,
- Off-gas determination by oxidation for a quantitative trapping.

This paper presents the technical development of the new equipment implemented in the C11/C12 shielded cells and along with the first results of the experiments on fuel dissolution studies.

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