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S. Bernard, M. Ledieu, B. Gleizes, Yves Pontillon, G. Ducros, E. Hanus

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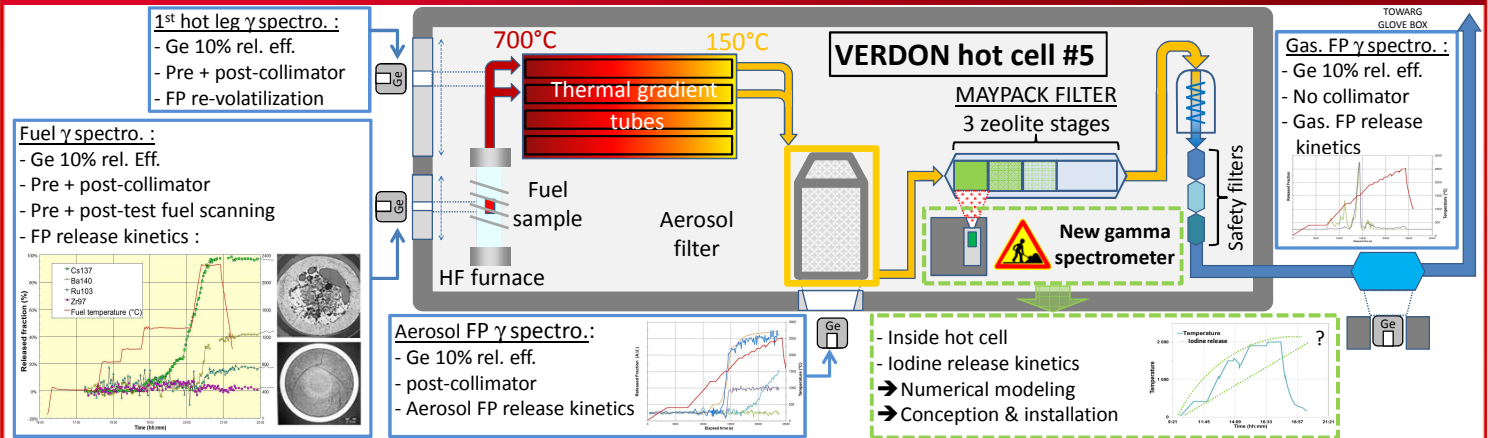
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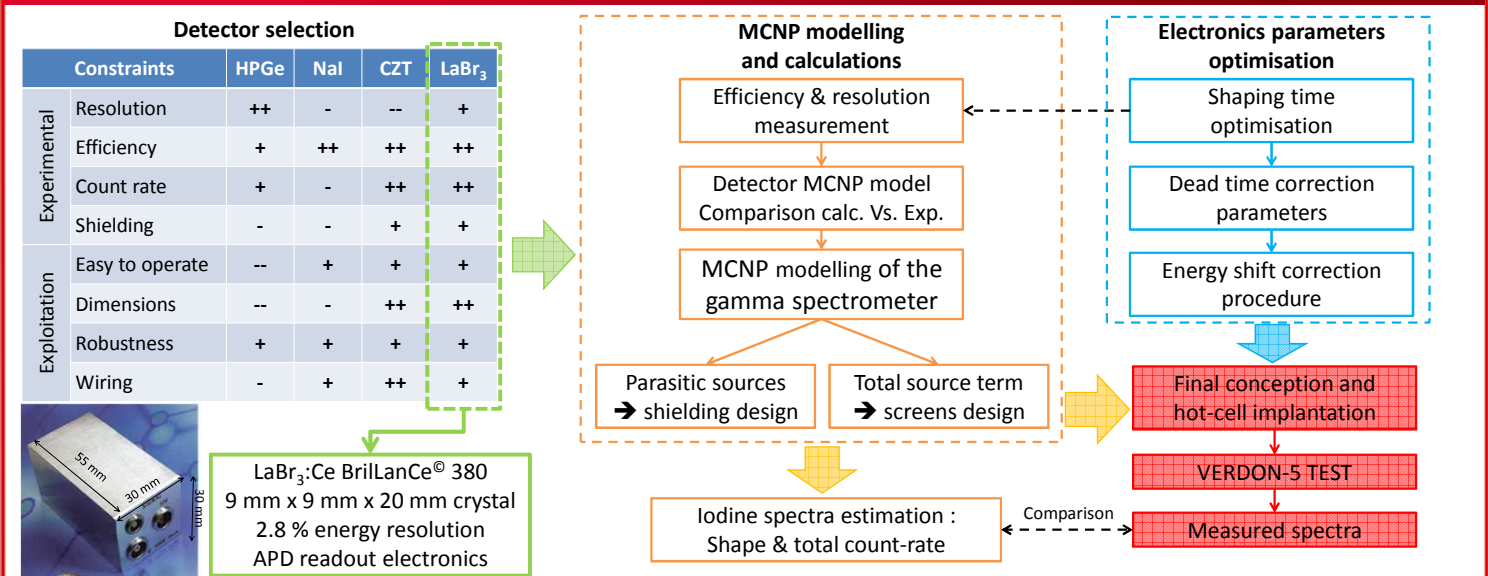
S. Bernard^a, M. Ledieu^a, B. Gleizes^a, Y. Pontillon^a, G. Ducros^a, E. Hanus^a
^aCEA, DEN, DEC, SA3C, F-13108, Saint Paul lez Durance, France
 e-mail: sebastien.bernard@cea.fr

Context: The VERDON laboratory located in the LECA-STAR facility is devoted to the monitoring of fission products release and transportation during severe accidents. In the recent context of the Fukushima events, a new key issue has been identified: the impact of control rod degradation on the release of volatile fission products (FP). A higher than expected fraction of gaseous iodine might have been released during the accident due to the reaction of boron with CsI. A test was performed on high burn-up UO₂ fuel to address this new issue and consolidate the database on the source term assessment. For this purpose a new gamma spectrometry device was implemented directly in the VERDON hot cell to record the iodine deposit kinetics on a dedicated filter. It completes the on-line gamma stations of the VERDON CET loop focused on the fuel sample, the first hot leg of the CET, the aerosol FP filter and gaseous FP release.

New gamma spectrometers on the VERDON CET Loop



Design approach



Implantation and results during the VERDON5 test

Gamma spectrometer realisation

Optimized lead shielding and sighting solid angle 3 x 1-decade screen

Calibration system with ¹³⁷Cs and ⁶⁰Co isotopic sources

VERDON5 first results: iodine release kinetics measurements

- Experimental spectrum analysis:
 → Iodine main peaks

- Acq. Rate ~ 1 spectrum / min.:
 → count-rate vs. time plotting