

# Two years of R&D chemistry in C11/C12 Shielded Cells at Atalante Marcoule.

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## Abstract

After 4 years work project, a new shielded cells facility is set into service in Atalante Marcoule under the "codename" C11/C12.

It is devoted to the head-end high activity reprocessing studies. Physically, C11/C12 is constituted of eleven working places behind one meter of both concrete and leaded glasses biologic wall. The conception of C11-C12 was decided and organized to permit a large variety of experiments.

These equipments permit among other things studies on the following steps:

- ◆ Fuel and target mechanical treatment,
- ◆ Thermal treatments under inert gas flow,
- ◆ Dissolution using several media like nitric acid or complexing agent,
- ◆ Solid-liquid separation by filtration or centrifugation,
- ◆ Elements separation using liquid-liquid extraction apparatus like mixer-settlers or centrifugal contactors,
- ◆ Elements separation using solid-liquid chromatography.

From June 99 to april 2001, the principal experiments realised were consisted to:

- ◆ June-august 99: MOX fuel dissolution
- ◆ September 99: Liquid-liquid separation of U, Pu from fission products and minor actinides by the PUREX process,
- ◆ October 99: Test of DIAMEX process (selective separation of trivalent elements versus other fission products)
- ◆ December 99: Test of SANEX process (selective extraction of trivalent actinides versus lanthanides).
- ◆ June 00: Test of SESAME process (selective extraction of americium versus curium)
- ◆ September 00: Test of SANEX II process
- ◆ November 00: Test of DIAMEX process in presence of complexing reagents to improve selectivity versus Pd,
- ◆ April 01: Test of CALIXARENE process for selective extraction of Cs from DIAMEX raffinate
- ◆ April 01: dissolution of several pièces of irradiated fuel for metallurgical cladding tests at the CEA / LECl.

The next years will be devoted to increase and diversify experiments in respect with quality and waste management, reducing the size of apparatus and amount of needed radioactive materials.