• Plutonium is produced during UO2 combustion in light-water reactors (LWR). Reprocessing of UO2 spent fuel gives access to this plutonium, which after conversion into (U,Pu)O2 (MOX) fuel, is recycled and burnt in existing LWRs. That scenario greatly enhances fissile material inventory industrially available, markedly increasing so the period during which electricity can be produced from nuclear power plants.

• The course introduces plutonium from a chemical, physical and neutronic point of view. The introduction stresses the interest of plutonium in the electricity production and also highlights the industrial context in which plutonium is converted into MOX and burnt in existing LWRs.

The second part of the course describes the technology of MOX fuel fabrication (processes, products).

In the third part, the in-reactor performance of MOX fuel is presented. Neutronic per-formance and in-reactor thermal-mechanical behaviour are analysed and compared to UO2 fuel.

The fourth part describes the industrial situation for what concerns MOX production and in-reactor loading.

The last part is dedicated to the Research & Development activities related to plutonium (high burnup achievement, reactor cores and alternative fuels designs, weapon-grade plutonium, …).

• The objective of this course is to provide an overview of the technical aspects and in-dustrial activities related to plutonium recycling in LWRs. To efficiently attend the course, previous education in material sciences and reactor core physics are required.

• A two-day course is given, including a visit of BELGONUCLEAIRE MOX fabrication plant, located in Dessel, close to SCK•CEN (Mol). The course instructor is: Dr. M. LIPPENS, working at BELGONUCLEAIE since 1975. The main scientific work consists in the study of the MOX fuel in-reactor performance.

The course is organised within the Belgian interuniversity programme for Master of Science in Nuclear Engineering.
http://www.sckcen.be/BNEN

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Course co-ordination:

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Course venue:

SCK•CEN, club-house, Mol Belgium

Itinerary: http;//www.sckcen.be

Course language: English

Course fee:

The course is free of charge for academic registered MSc students. Industrial participants should contact the registration office.

Registration deadline:

February 15, 2004

Registration office:

Catherine SPECT cspect@sckcen.be

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BNEN is a consortium of the Belgian universities *Katholieke Universiteit Leuven, Université Catholique de Louvain, Université de Liège, Universiteit Gent, Vrije Universiteit Brussel* in collaboration with the *Belgian Nuclear Research Centre SCK•CEN*.

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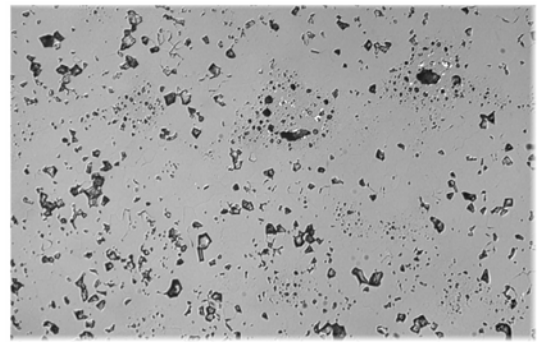

Special Training Course
Mox - Fuel

Mol, Belgium
February 26-27, 2004

Organised by:

BNEN

Belgian Nuclear higher Education Network

Mox - Fuel

SCK CEN Mol, February 26-27, 2004

Marc Lippens, BELGONUCLEAIRE

26 February 04 09.00 – 17.00	**27 February 04** 09.00 – 17.00
Introduction to Plutonium	MOX In-Reactor Performance
MOX Fuel Fabrication	Industrial Panorama Research and development activities
	BELGONUCLEAIRE Plant Visit