

## WHY TO STUDY CHEMISTRY OF THE NUCLEAR FUEL CYCLE?

Nuclear industry faces numerous challenges, including the operation and maintenance of its existing reactors, waste management, the decommissioning of obsolete reactors, and research and development for future nuclear systems. These activities require call for the hiring and training of a great number of scientists and engineers every year worldwide.

## TARGET GROUP

The target group is both students at the master level and doctoral students.

## POTENTIAL WORKING POSITIONS

While the course does not substitute full formal training, it is of relevance to those who want to occupy a position as

- ❖ an engineer on a raw uranium production site or other sites, in the factories at the heart of the fuel cycle be either in the refinement, enrichment or recycling stages,
- ❖ a designer, engineer or operator of storage sites for waste,
- ❖ an engineer in nuclear power plants.

This course is also of relevance for those who want to pursue PhD programmes within nuclear sciences.

## CHIMIE PARISTECH

Ecole nationale supérieure de chimie  
de Paris, France  
[www.chimie-paristech.fr](http://www.chimie-paristech.fr)

## COURSE RESPONSIBLE

Gérard COTE  
[gerard-cote@chimie-paristech.fr](mailto:gerard-cote@chimie-paristech.fr)

## CINCH

Cooperation In education in  
Nuclear Chemistry

[www.cinch-project.eu](http://www.cinch-project.eu)

## PROJECT LEADER

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CINCH is an EU 7<sup>th</sup> Framework Programme project within EURATOM aiming to coordinate nuclear chemistry and training in Europe .

The project includes the formation of a long-term EURATOM Fission Training Scheme (EFTS) providing a common basis to the fragmented activities in this field and thus move the education and training in nuclear chemistry to quantitatively new level.



ParisTech  
L'ÉCOLE NATIONALE SUPÉRIEURE  
DE CHIMIE DE PARIS



Consortium



## Chemistry of the nuclear fuel cycle course

Master (MSC) and PhD level

14<sup>th</sup>-25<sup>th</sup> January 2013  
Paris, France



# CHEMISTRY OF THE NUCLEAR FUEL CYCLE COURSE

## OBJECTIVES

After the course the students should have a global overview of the chemistry and the physics necessary at the various stages of the fuel cycle, from the front-end to the back-end. In addition they should have basic knowledge in decommissioning of nuclear facilities and in radiological protection.

## ARRANGEMENTS, LANGUAGE

The course runs over 2 weeks (January 14<sup>th</sup>-25<sup>th</sup> 2013) in Paris, France. The course will combine lectures and technical visits. All teaching will be in English.

## ADMISSION REQUIREMENTS

In order to apply for admission to join the course, please contact Gérard Cote ([gerard-cote@chimie-paristech.fr](mailto:gerard-cote@chimie-paristech.fr)) to obtain a registration form. The form together with this brochure are also available on the CINCH web page <http://www.cinch-project.eu/?art=courses>. A limited budget exists to support students and young researchers. Application deadline is December 3<sup>rd</sup>, 2012.

## ACCOMMODATION

A list of hotels will be provided. Help can be obtained from Gérard Cote ([gerard-cote@chimie-paristech.fr](mailto:gerard-cote@chimie-paristech.fr))

# COURSE PROGRAMME JANUARY 14-25th, 2012

## Lectures

The uranium deposits in the world: their distribution and genesis – Rehabilitation of uranium mines and mill tailings

Extraction of uranium: from ores to the yellow cake

From uranium concentrate to UF<sub>6</sub>: the conversion

Nuclear spent fuel recycling

Chemistry of cooling circuits of nuclear power plants

Nuclear waste conditioning

Overview on radioactive waste management issues

Behavior of nuclear waste in geological final repositories

Decommissioning of nuclear facilities

The scientific and societal bases of the system of radiological protection

## ADDITIONAL INFORMATION SOURCES

[www.cinch-project.eu](http://www.cinch-project.eu)  
[www.chimie-paristech.fr](http://www.chimie-paristech.fr)  
[www.cea.fr](http://www.cea.fr)  
[www.andra.fr](http://www.andra.fr)

## Technical visits

*Visit CEA Saclay*

*Visit CEA Marcoule*

*Visit ENSCP laboratories*

*Visit of ANDRA disposal facilities for very-low-level (VLL) and low-level and intermediate-level short-lived (LIL/SL) waste (Soulaines-Dhuys)*

*Visit of the Meuse/Haute Marne underground ANDRA laboratory (Bure-Saudron)*

