

RECRUTEMENT D'UN CONTRAT de PROJET D'ENSEIGNEMENT ET DE RECHERCHE

RENTRÉE 2025

U.F.R, Ecole ou Institut : ESIX Normandie	
Equipe de recherche : LUSAC (ER 4253)	
Nature du concours (<i>préciser article</i>) :	CDD Enseignant-Chercheur (3 ans /192h)
Section / Discipline demandée :	29/33 (constituants élémentaires/chimie des matériaux)
Libellé général profil publication :	Enseignant-chercheur contractuel
Date recrutement demandée au :	1 ^{er} septembre 2025
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- renseignements recherche	Sylvain.guillou@unicaen.fr
- renseignements adm°	campusmanche.moyenspedagogiques@unicaen.fr

Profil publication :

La personne recrutée enseignera au sein du département GSI de l'ESIX Normandie à Cherbourg. Elle assurera principalement des enseignements de sciences dans le diplôme « Génie Nucléaire » et également en support dans les autres diplômes du département.

Elle interviendra en formation continue comme en apprentissage. Les matières concernées portent sur les bases de la physique nucléaire, la sûreté nucléaire ainsi que sur la chimie des matériaux (TP métallurgie, polymère, céramiques, etc.). La personne recrutée devra s'investir dans le suivi des projets, stages et autres actions de formation.

Les activités de recherche seront menées au sein du LUSAC dans l'équipe SEEM (Stockage de l'Energie Electrique et Matériaux) de Cherbourg en collaboration avec le LPC et le CRISMAT de Caen. Une bonne connaissance des matériaux et procédés céramiques sera demandée. Les activités de recherche porteront sur l'optimisation du frittage et la densification de matériaux céramiques.

Profil publication en anglais :

The candidate will teach within the GSI department of ESIX Normandie in Cherbourg. He/She will primarily provide instruction in sciences for the "Nuclear Engineering" degree and also offer support in other degrees within the department. He/She will be involved in both continuing education and apprenticeship programs. The subjects covered include the fundamentals of nuclear physics, nuclear safety, and the chemistry of materials (practical work in metallurgy, polymers, ceramics, etc.). The

recruited individual will be expected to engage in the supervision of projects, internships, and other training activities. Research activities will be conducted within the LUSAC in the SEEM (Electrical Energy Storage and Materials) team in Cherbourg, in collaboration with the LPC and CRISMAT in Caen. A strong knowledge of ceramic materials and processes will be required. The research activities will focus on optimizing the sintering and densification of ceramic materials.

Rajouter les mots clefs :

Physique Nucléaire, Sureté Nucléaire, radio-protection, frittage, céramiques.

Nuclear Physics, nuclear safety, radio-protection, sintering, ceramics.

Educational Programs :

- **Levels :**
 - Bachelor's Degree
 - Master's Degree
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- **Degrees:** Primarily Engineering Degrees in "Nuclear Engineering," but also in related fields ("Energy Engineering" / "Industrial Engineering"), in FISE and FISA.
- **Subjects:** The recruited candidate must teach a minimum of 192 hours (equivalent TD). The main teaching areas include: nuclear physics, nuclear safety, and materials chemistry.
 - Introduction to Nuclear Safety (16 hours eq/TD)
 - Fuel Cycle (32 hours eq/TD)
 - Radionuclides in the Environment (20 hours eq/TD)
 - Ceramics/Metallurgy/Polymers (36 hours eq/TD)
 - Granular Media / Liquid Media / Corrosion (18 hours)
 - Containment/treatment of effluents (12 hours)

The position will also involve supervising apprentices in the Nuclear Engineering program. The candidate will also be involved in supervising student projects (knowledge in Project Management will be appreciated). The recruited person will also participate in the functioning of the "Nuclear Engineering" degree (jury, feedback, etc.).

Objectives in terms of content and pedagogical supervision: The recruited person will teach within the GSI department of ESIX Normandie in Cherbourg. He/She will mainly teach science courses in the "Nuclear Engineering" degree. However, he/she may also teach in other programs within the department.

RESEARCH PROFILE :

Theme/Project: The SEEM (Electrical Energy Storage and Materials) team of LUSAC includes a research focus on processes related to powdered and ceramic materials. This team optimizes the mixing and grinding phases of oxide powders to control densification. The team also develops innovative processes such as flash combustion or sol-gel processes to control the microstructure of powders and densified materials under various atmospheres.

At the team level, the laboratory's areas of expertise include studies, optimizations, and understanding the relationship between properties and synthesis and shaping processes of powders. All shaping processes fall within the domain of bulk materials or thick layers. The project aims to support a position in the 29th section, open for competition in the same degree, by developing an already initiated activity (with the Helmholtz Centrum in Dresden) on materials simulating nuclear fuel under different atmospheres and densification methods (classic sintering, SPS, etc.). This activity will be conducted in collaboration with CRISMAT and LPC in Caen.

Preliminary studies with the Helmholtz Zentrum in Dresden have examined the influence on the microstructure (porosity, grain size, etc.) of various materials, including actinide and lanthanide oxides (cerium oxides, gadolinium, etc.).

The recruited candidate will strengthen studies on these types of materials but may also participate in other team themes related to materials and applications for energy and the environment, in collaboration with the actors of the 3NC project. The candidate must have conducted or participated in research on the subject and must have skills in one or more of the following areas:

- Knowledge of the nuclear fuel cycle (synthesis/reprocessing)
- Mastery of ceramic processes (classic synthesis (solid route); sol-gel synthesis or soft chemistry, mechanosynthesis)
- Mastery of densification processes (sintering) by various methods (classic/SPS/etc.)
- Mastery of classical material characterizations (structural (XRD), microstructural (SEM-EDS/BET))
- Knowledge of ionizing radiation characterization techniques.

Application procedures

Candidates can submit their complete application (CV, cover letter, and copy of their most recent diploma) by email to campusmanche.moyenspedagogiques@unicaen.fr

with a copy to drh.recrutement.enseignants@unicaen.fr, before May 30, 2025.