

# NOMATEN SEMINAR

Tuesday, APRIL 5th 2022 13:00 (1.00PM CET)

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## **Radiation effects and ion beam synthesis of metallic nano-oxides in steels**

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### **Abstract:**

In this seminar, in the light of a selection of scientific results obtained throughout the past years, I will give an overview of our research themes on ‘*Materials and Irradiation*’ at the Energy and Environment pole at IJCLab, with a peculiar accent on the use of ion beams to either synthesize, modify or characterize materials. An overview of the JANNuS-SCALP facility [1] will also be presented. Examples will be given on different nuclear materials studied for fission and fusion nuclear applications, and especially on recent results obtained on Oxide Dispersion Strengthened steels, either to understand the formation of metallic nano-oxides [2], or to study the effects of irradiation and light gas accumulation on their microstructure [3,4].

[1] A. Gentils, C. Cabet, *Investigating radiation damage in nuclear energy materials using JANNuS multiple ion beams*, Nucl. Instrum. Methods B **447** (2019) 107, <https://doi.org/10.1016/j.nimb.2019.03.039>

[2] PhD thesis of Martin Owusu-Mensah, Université Paris-Saclay, 2019

[3] PhD thesis of Olga Emelianova, Université Paris-Saclay, 2020

[4] PhD thesis of Marie-José Saleh-Afif, Université Paris-Saclay, 2021

**Bio:**

The research of Aurélie Gentils on “Ion Beam Modifications of Materials” originates in her Ph.D. thesis work in 2003. Her research at CNRS (French National Centre for Scientific Research) since 2008 investigates ion beam modifications in nuclear materials, using mainly the JANNuS-Orsay facility, an invaluable experimental tool of direct relevance for the investigation of microstructure's kinetics in materials at the nanoscale under single and/or dual ion beam(s). She is currently the scientific leader of this quite unique facility that comprises a Transmission Electron Microscope connected to two ion accelerators, allowing direct observation of ion beam induced modifications in materials at the nanoscale.

Energy and Environment pole website:

<https://energie.ijclab.in2p3.fr/en/home/>

JANNuS-SCALP facility <https://jannus-scalp.ijclab.in2p3.fr/>