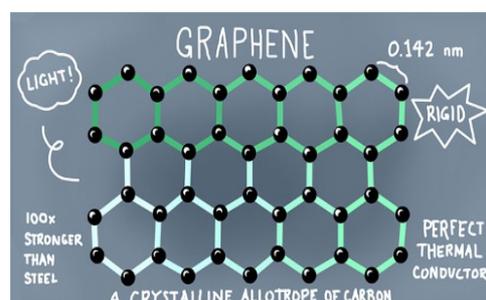


## Internship: « 2D Materials : Applications for Electricity »

Location: EDF R&D at Moret sur Loing in France, and Thalès at Saclay in France (Paris region).

2D materials consist of single sheets with weak interactions between them. Since 2004, Graphene is the most studied 2D material, it is full of promises and recent scientific publications suggest that it could be used in a wide range of applications. However, it is still too early to find these promises in real applications, but the potential is there.



### ▪ Internship context

The R&D division of EDF<sup>1</sup> in France has more than 2000 researchers and support staff in addition to around 120 doctoral students. Its three French research centres are located around Paris, in Saclay, Moret sur Loing and Chatou. It is an associated member of the Graphene Flagship with connected research on the use of graphenes in the field of energy storage such as supercapacitors and air electrodes.

We would like to broaden our research and explore what 2D materials can bring to other potential applications within the scope of EDF. These will be mainly focused on our Electrical Materials Laboratory and include cables, batteries and supercapacitors, electromagnetic shielding, connectors, transformers, converters, substation equipment, sensors, etc. This work will be in close collaboration with Thales Research & Technology<sup>2</sup> and this internship will be an opportunity to work in the research centers of both companies.

### ▪ Objectives and approach of the internship :

- 1) Interviews with research engineers within the Electrical Equipment Laboratory and literature search in order to draw up a state-of-the-art on the potential use of 2D materials to improve the properties of electrical equipment and the electricity storage.
- 2) Experimental work on the use of 2D materials in electromagnetic shielding. A feasibility study will be conducted in collaboration with Thales which will include the preparation and testing of composite materials using 2D materials.

**We are looking for a motivated student, with a strong interest and some knowledge of 2D materials, preferably with some spoken and reading French skills. The internship will include a stipend of around 1000€/month and the duration will be 5 to 6 months.**

Tutors : EDF R&D : Antonella Cristiano-Tassi, Philippe Stevens ;  
Thalès (TRT) : Paolo Bondavalli

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<sup>1</sup> <https://www.edf.fr/en/the-edf-group/who-we-are/activities/research-and-development>

<sup>2</sup> <https://www.thalesgroup.com/en/global/innovation/research-and-technology>