

**SERVICE DE METROLOGIE NUCLEAIRE**  
**NUCLEAR ENERGY**

**INTERNSHIP**

Academic year **2021-2022**

*The topics listed below correspond more to **themes** in which master theses can be realized, than to a detailed description of topics. Depending on the interest of the students, more theoretical or instead industry-related topics will be developed. Some of the proposed themes are more convenient for an internship, to be made before the master thesis.*

*The themes proposed are preferably **accessible mainly to students in engineering physics and in electromechanical engineering.***

**13. Thorium-based opportunities for nuclear energy applications (in collaboration with Solvay)**

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***12-week internship !!!***

Founded in 1863, Solvay today ranks among the world's top three companies for the vast majority of its activities and achieved net sales of 8.9 billion euros in 2020. With more than 23,000 employees in 64 countries, Solvay brings together people, ideas and elements to reinvent progress. The Group seeks to create sustainable shared value for all, in particular through its Solvay One Planet plan articulated around three pillars: protecting the climate, preserving resources and promoting a better life.

With a large quantity of thorium resulting from its historical rare earth extraction activities, Solvay wishes to investigate the opportunities of valorisation, particularly in nuclear energy.

The internship will cover a bibliography study of molten salt reactor (MSR) and small reactor (SMR) technologies, the main technical developments ongoing in the world, the search for opportunities for thorium (MSR, SMR, others) as well as for the main companies active in these developments, a comparative analysis of the use of thorium in nuclear fuels, ...

The intern will write a summary of his work (in English) as well as an executive summary in French.

A technical expert from the company will supervise the intern. In addition, a bimonthly meeting will allow to follow the progress of the work and to consider any possible reorientation, if needed. A final meeting will focus on sharing the conclusions of the work.