RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

INSTITUT FRANÇAIS

TAMARA PATRANIKA

From Sweden to France

Project: **Elucidating self-healing ability of boronic ester-based binders for silicon anodes in lithium-ion batteries**

Research topic: **Chemistry**

Swedish Institution: **Uppsala University**

French Institution: **Center of Nuclear Magnetic Resonance at Very High Fields (CRMN)**

Dates of mobility: **06/04/2025** to **11/04/2025**

Program: **SFVE-A**

PRESENTATION

Tamara Patranika is a PhD student at Ångström Advanced Battery Centre of the Department of Chemistry at Uppsala University. She is working on materials for lithium-ion batteries, more specifically functional polymeric binders. The work focuses on materials chemistry on a small scale, with future possibilities of larger application, such as electric vehicles or trucks. In the beginning of 2026 she will defend her thesis.

ACTIVITIES IN FRANCE

Tamara Patranika's main objective at the Center of Nuclear Magnetic Resonance at Very High Fields (CRMN) in Lyon was to investigate the behaviour of the binder in a lithium-ion battery electrode upon cycling. Owing to the high-magnetic field available at CRMN, the goal was to distinguish different environments of the bonds of the binder in different states of the battery cycling. The binder is dynamic and consists of boronic ester and acid groups, which were more visible at the higher field. She was hosted by Dr. Wassilios Papawassiliou during the week and joined by Dr. Katharina Märker from the French Alternative Energies and Atomic Energy Commission (CEA). The battery electrode samples were prepared beforehand in Uppsala and brought to Lyon for the measurements. The week was highly productive and more samples than anticipated were measured, with a lot of results that now will be analyzed. As often in science, these results might give rise to new interesting questions, and therefore a second visit has already been in the loops in order to continue the collaboration. .