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## ASGARD, a 15 month update

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The ASGARD project (Advanced for Generation IV reactors: Reprocessing and Dissolution) started in January 2012. Its main goal is to understand and bridge the gap between the fuel reprocessing/separation community currently represented by the ACSEPT project and the fuel manufacturing and irradiation community currently represented by the FAIRFUELS project. The main goal is to investigate the technical challenges posed by nuclear fuels for GEN IV fast reactors, namely: oxide and inert matrix fuels, nitride fuels, and carbide fuels. These three fuel groups also constitute the three scientific domains. In each domain similar issues are addressed concerning the fabrication and recyclability of these novel fuels. Thus different production routes are investigated and these routes are in parallel reviewed by our industrial partners to assess the feasibility of large scale manufacturing. The manufactured fuels are also investigated with respect to chemical and physical characterisation. When a suitable route for uniform production on lab scale has been settled, the possibilities for recycling is addressed by investigating possible dissolution routes. Different fuels have different issues, e.g. in the nitride case the isotopically enriched nitrogen ( $^{15}\text{N}$ ) must be recycled and for the carbides the formation of different organic species produced upon dissolution needs to be addressed.

In parallel to this conversion issues for the possible recycling and separation processes are addressed in collaboration with the separation community. The final aim is to find a convenient route to convert the separated product solutions (U, Pu, MAs) from reprocessing and convert them into materials suitable for fuel production.

Since the ASGARD project deals with considerable amounts of nuclear material, training and education is a vital part of the project. During the course of the project several campaigns will be launched to educate younger scientists in the art of handling radioactive material in a safe and secure way. This will be carried out in collaboration with other relevant EU framework projects such as ACSEPT, SACSESS, FAIRFUELS and CINCH.

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