



DisCo Project Newsletter No.5, November 2021

Latest news

Final DisCo Meeting

It is hard to believe but the DisCo project is in its last month! We held the final meeting as a hybrid meeting on October 20-21 with some people meeting up in Barcelona, while a majority attended virtually. It is difficult with the hybrid format but the team from Amphos 21 did a superb job! See the short report from the meeting on next page.

Communication & dissemination

Results from the DisCo project have been presented various international conferences over the years. Lately, there was a poster presented by Emma Perry (Cambridge) at the European Nuclear Young Generation Forum (ENYGF), and a presentation by Philip Kegler (Jülich) at the Scientific Basis for Nuclear Waste Management Symposium. Overall, final results of the project will be presented at the next Euradwaste conference in 2022. Published papers from the DisCo projects are found here: <https://www.disco-h2020.eu/Home/SpecificInvestigation>

Training at JRC

The DisCo training programme has successfully managed to deliver the group training event at JRC as well as 4 individual visits at JRC.

Achievements

As we come up to the end of the project time, we can conclude that we have performed an impressive number of experiments and data from the project has also successfully been used in the model developments. In spite of the difficulties posed by the Covid-19 pandemic we have continuously delivered data and results. We have passed our milestones and have come to some important conclusions. Both experiments and models indicate that modern fuels (MOX and doped fuels) respond similarly to the expected repository environment as standard spent fuel.

The thorough and systematic study of the effects of additives on UO_2 has enhanced our understanding of the solid state characteristics. This is needed for interpretation of the various types of dissolution data that the project has generated.

Finally, DisCo has contributed to the knowledge transfer in the EU!

Want to know more? www.disco-h2020.eu

Twitter: search #discoh2020.

Or email: disco@skb.se



LinkedIn Group: DisCo-H2020

SHORT REPORT from the DisCo 4th Annual Meeting

Hybrid DisCo in Barcelona

The fourth DisCo Annual Meeting took place as a hybrid meeting, 20-21 October 2021. It was handled very well by the A21 team. After the ~1,5 years of restrictions due to the Covid-19 pandemic, there was a number of people who had the chance to meet face to face in Barcelona. The rest connected to the meeting via the meeting links. We are happy to report that all partners, all EUG and AG members were represented at the meeting. *See group photo next page!*

Quick glance at results presented

At this final meeting, the focus was on summarizing the results of the work packages and project overall. In addition, we had 12 individual presentations from partners showing results from the dissolution studies and modelling work. At this time we now could see results comparing various model systems, such as samples doped with Cr, Pu, and Cr& Pu in different environments. There was also new data for the MOX model systems, where (U,Th)O₂ dissolution was compared with the french (U,Pu)O₂ in synthetic Cox water. A general observation is the strong effect of Fe but also that the four-valent additives appear to have some protective effect with regards to oxidative dissolution.

The spent nuclear fuel dissolution results presented show that in order to draw conclusions concerning long term matrix dissolution, it is imperative to have a stable and controlled system and, once this is achieved, data needs to be collected to longer than one year, preferably 2-3 years. The



Pellets of (U,Th)O₂ made at University at Cambridge used in the dissolution experiments.



Autoclave set-up for the Eurecat experiments at JRC.

results from the spent fuel experiments show that there is no significant difference between standard UO₂ fuel and the modern fuel types investigated: MOX and Cr,Al-doped fuel.

The modelling work presented shows that the models can incorporate these modern fuels and the models have been successfully developed to capture the progress in conceptual understanding.

Training and mobility measures

The 4th Webinar (recorded, see web page) was given by Mats Jonsson (KTH, Sweden) on the subject “Modeling radiation induced dissolution of spent nuclear fuel”. The group training at JRC, which was originally planned for the 3rd annual meeting, finally took place virtually 3-4 November with 11 participants from Associate Group members, project partners and also a few external to the project. This is due to remaining restrictions due to the pandemic. The visits to the Hot Cell facility was handled by “virtual tours” given by JRC and KIT-INE.

Final reporting

The proceedings from the 4th Annual Meeting and the rest of the deliverables will appear on the DisCo web page once they are public.

Group Photo and ScreenShot from the DisCo 4th AM

Thanks everyone for a great meeting and project!

