



## ABOUT

The Nuclear Chemistry and Industrial Materials Recycling group at Chalmers started its work in the recycling area in the 60s through the works of Professor Jan Rydberg and his co-workers. Activities focused on the treatment of mainly liquid waste waters using solvent extraction. In the 70s the recycling part was separated into companies and did not return until 2007 when the company Stena Metall decided to fund a material recycling chair at Chalmers.

Since then, the recycling activities have grown to a team of about 12 PhD students and 4 senior scientists. The work performed and the personnel are closely linked and partially shared with the nuclear chemistry part of the group. In 2007 the Competence Center Recycling (CCR) was launched.

This centre comprises scientists from all kinds of disciplines such as chemistry, chemical engineering, LCA, practical philosophy, environmental systems analysis, physics, mechanical engineering etc. In this constellation, considerably wider recycling issues can be handled than with only one small department. Thus the industrial involvement in this centre is significant.

## EXPERTISE

Our main expertise is solution chemistry and solvent extraction. However, this includes the whole range from estimating and using activity coefficients for optimising processes and basic chemical understanding and speciation all the way to complete process engineering a pilot plant scale.

In addition to the hydrochemical expertise we also have some pyrochemical activities on a more basic science level.

Since we are a licenced radiochemical laboratory, we also have extensive expertise in the handling of radioactive material. This is very useful for e.g. concentration determinations but also for handling of materials that require this kind of licence, i.e. uranium containing minerals.

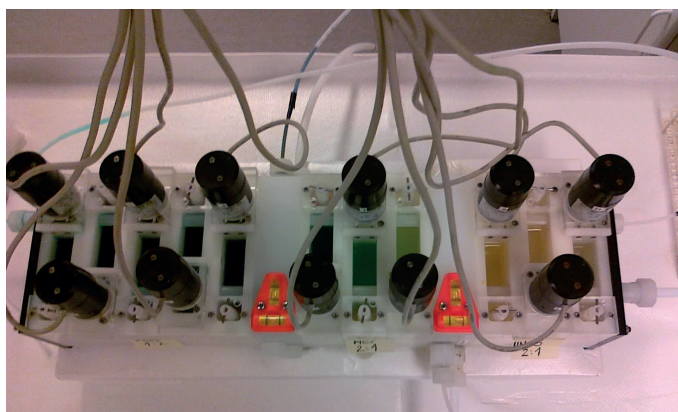
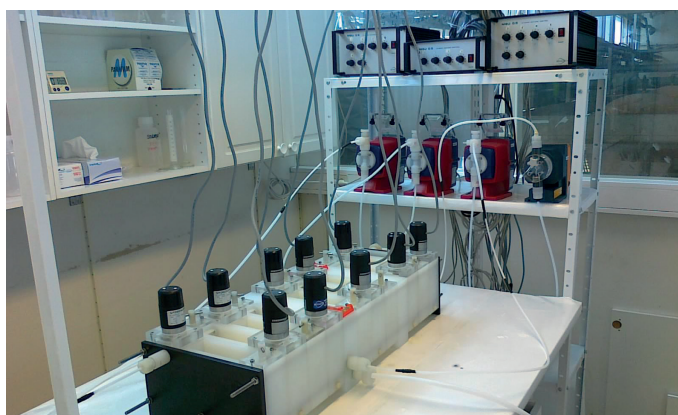
## FACILITIES & SERVICES

The main part of the recycling activities deal with hydrochemical processes. To this end, we are equipped with state-of-the-art concentration determination devices such as ICP-MS, ICP-OES, iC and AAS. In addition, we can use radioactive tracers to facilitate a

more accurate determination of concentrations in different liquid and solid phases.

On the process side we have normal chemical laboratories but also mixer-settlers and centrifugal contactors for process testing. The former is together with a temperature controlled dissolver and a refiner connected to a complete test bed for a separation process in a smaller pilot scale.

For pyrochemical processing there are several dedicated ovens including some in glove boxes to ensure atmosphere control.



## MORE INFORMATION

Website: [www.chalmers.se](http://www.chalmers.se)

Contact: Christian Ekberg  
che@chalmers.se