



**of the European Atomic Energy Community (Euratom)
for nuclear research and training activities (2007-2011)**

Collaborative Project

<i>CROCK</i>

Project title: **Crystalline Rock Retention Processes**

Project number: **269658**

Project coordinator: **Karlsruher Institut für Technologie, Karlsruhe,
Germany**

HZDR participant: **Institute of Radiochemistry**

Starting date: **01.01.2011**

Duration (months): **30**

Summary

The EURATOM FP7 Collaborative Project “Crystalline Rock Retention Processes” (CP CROCK) is established with the overall objective to develop a methodology for decreasing the uncertainty in the long-term prediction of the radionuclide migration in the crystalline rock far-field. The project is launched in response to the need identified in conjunction with selection of retention data for the forthcoming crystalline host-rock HLW disposal Safety Case.

The process of selecting a set of data for this purpose showed that the spread in data is broad and that this spread in data cannot presently be related to material properties or processes. Consequently, very conservative numbers need to be used in order to be defensible within the Safety Case. This does not lead to unacceptable dose predictions, but remains highly unsatisfactorily.

The project makes use of the broad set of existing analytical approaches, methodologies, and general knowledge from decades of past investigation. It builds on the output and main

conclusions of the 6th FP IP FUNMIG project and the Swedish site selection program. The experimental program reaches from the nano-resolution to the PA relevant real site scale, delineating physical and chemical retention processes.

Existing and new analytical information provided within the project is used to set up step-wise methodologies for up-scaling of processes from the nano-scale through to the PA relevant km-scale. Modeling includes testing up-scaling process and parameters for the application to PA and in particular, the reduction of uncertainty.

The 2,5 years project is implemented by a consortium with 10 beneficiaries consisting of large European research institutions, universities and SME's and from countries with dedicated crystalline host-rock disposal programs and particular competence in this field. National waste management organizations participate as associated groups, contributing with co-funding to beneficiaries, infrastructure, knowledge and information. They also contribute together with national regulators to guidance with respect to application of the project to the disposal Safety Case and scientific-technical review.