Crystalline Rock Retention Processes

A 7th FRAMEWORK PROGRAMME COLLABORATIVE PROJECT (2011-2013)

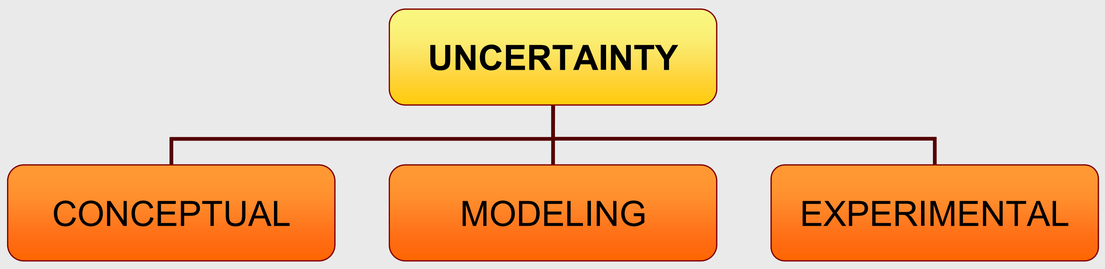
Supported by
European Union's European Atomic Energy Community's (Euratom) Seventh Framework Programme FP7/2007-2011

Introduction

The Collaborative Project CROCK is based on the desire to improve the safety statement for the crystalline rock far-field as a radionuclide migration barrier. The barrier function studied is radionuclide retention. Both key aspects of retention are regarded, i.e. chemical processes and enhanced residence time in stagnant flow-system regions (matrix diffusion). The project started on 1st January 2011 and will last 30 months.

Objectives

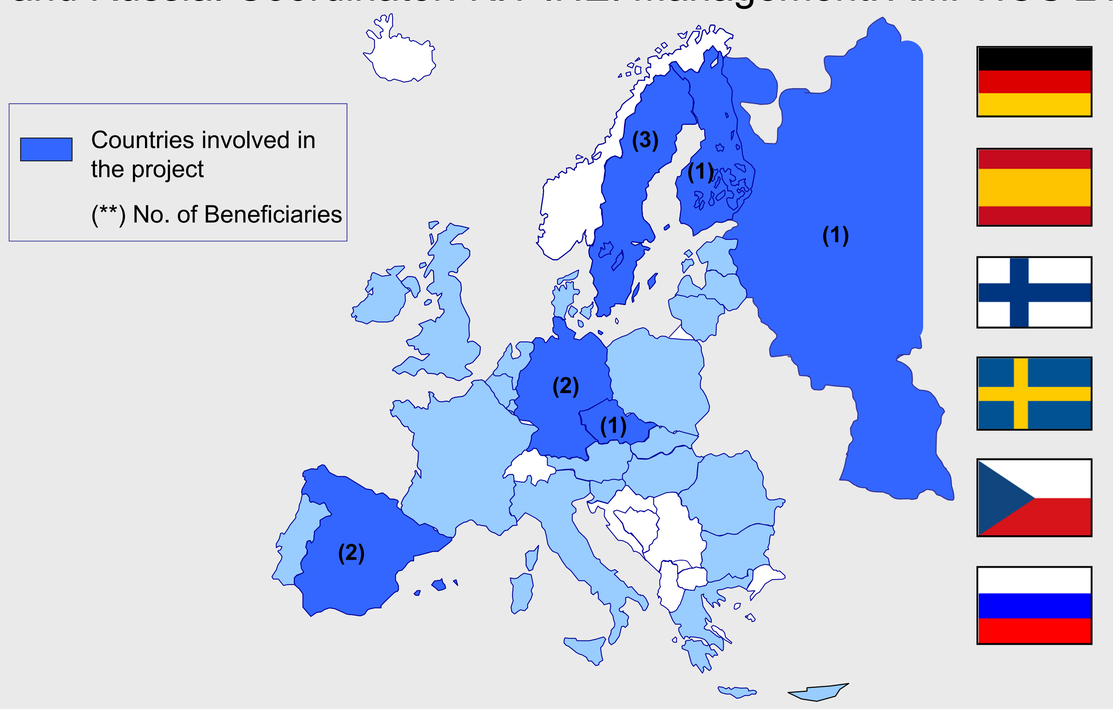
Uncertainty and the associated conservatism are the key problems in application of radionuclide retention for the purpose of improving safety statements around geologic disposal of high-level waste.



The approach of the project is to provide a methodology for defendable decrease in the uncertainty with respect to crystalline host rock far-field radionuclide transport.

Partners

Partners: 10 organizations from 5 EURATOM signatory states and Russia. Coordinator: KIT-INE. Management: AMPHOS 21



Project Work Plan

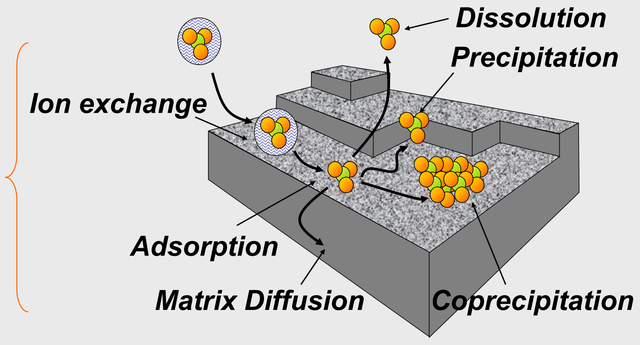
The scientific-technical work program is structured along 6 workpackages (WP1-6). Specific workpackages on knowledge management, education and training (WP7) and administrative management issues (WP8) are also included in the project:

WP 1: Experimental material, characterization and natural chemical homologues
WP 2: Radionuclide transport and sorption studies
WP 3: Real system analysis
WP 4: Conceptualization and modeling
WP 5: Application to the Safety Case
WP 6: Documentation

General description

- Documenting the **state-of-the-art** at the beginning of the project
- **Providing** and **characterizing samples** over different scales
- Conducting radionuclide transport and sorption **experiments**
- Identifying sorption processes through **natural homologue** analysis
- Establishing a consistent set of **model** descriptions
- Decreasing the uncertainty in **Safety Assessment** exercises

Different processes conceptualized as retention that will be studied during the CROCK Project



Reproduced from Manceau et al. (2002) Reviews in Mineralogy and Geochemistry, 49, p.344

WP 7: Knowledge management, dissemination and training
WP 8: Project Management

There are four project bodies namely:

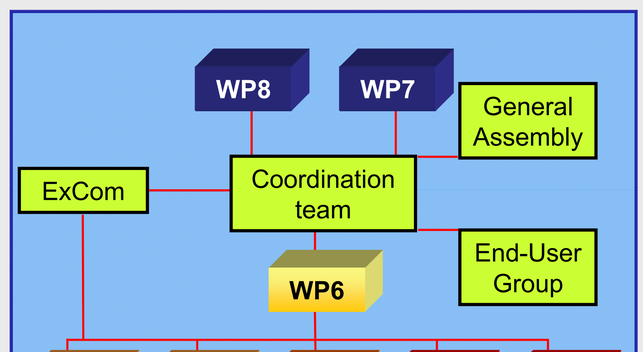
Coordination team: Coordinator: KIT, Coordination Secretariat: AMPHOS 21.

End-User Group consists of Waste Management Organizations and Regulators.

ExCom are the WP leaders.

General Assembly represents all the beneficiaries.

PROJECT STRUCTURE



Crock status

Start of the project → 1st January, 2011

Final Project Workshop:

14th -16th May 2013, Karlsruhe, Germany

www.crockproject.eu

Beneficiaries: KIT Karlsruher Institut für Technologie; AMPHOS 21; Gobierno de España, Ministerio de Ciencia e Innovación; Ciemat Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas; Helmholtz Zentrum Dresden Rossendorf; ÚJV; МГУ имени М.В.Ломоносова; VTT; Kemakta Konsult AB; CONTERRA AB

End-User Group: STUK; SKB Svensk Kärnbränslehantering AB; POSIVA; SURAO Radioactive Waste Repository Authority; Strål säkerhets myndigheten Swedish Radiation Safety Authority