

Geochemical modelling of radionuclide migration in Opalinus Clay

Dr. Theresa Hennig
(GeoForschungsZentrum Potsdam)

Safety assessments of potential nuclear waste disposal sites must demonstrate that the thickness of the host rock is sufficient to isolate radionuclides from the human environment. In this context, it is essential to investigate the underlying transport processes, e.g. sorption and diffusion, and their governing factors to quantify migration lengths on the host rock scale and for one million years.

Laboratory experiments are conducted for defined geochemical conditions to determine the required transport parameters. The combination with reactive transport simulations is a beneficial workflow to deduce process-based quantifications. This enables the application to the host rock scale or reveals knowledge gaps. This is shown for the examples of neptunium and uranium migration in the potential host rock Opalinus Clay.