



Ph.D position available in the Marie Curie Initial Training Network, Delta-Min.
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Amphos 21 Barcelona (Spain)

The Project Network is co-ordinated by Andrew Putnis (Münster), and includes partners from Toulouse, Reykjavik, London, Oslo, Granada, Patras, Stockholm and Barcelona.

The partner from Barcelona is Amphos 21 (www.amphos21.com). The student must have a non Spanish nationality and must be prepared to develop his/her Ph.D mostly at Amphos 21 and the Politechnical University of Barcelona. A minimum stage of 6 months in one of the other laboratories of the consortia is required.

Two subjects are open for the Ph. D thesis:

Cement-CO₂ -metal interactions

Cement-based materials play an important role in the multibarrier concept developed worldwide for the safe disposal of industrial and radioactive wastes both, in surface and underground repositories. The study of the mechanisms responsible for the metal immobilisation in cement matrices are not completely understood so far. Although most of the studies focus on the investigation of the sorption properties of these materials, there is an important body of information gathered during the last years that the most effective immobilisation processes involve elemental substitutions in the mineral structure. Examples can be found in the formation of mixed Ni-Al layered silicates, or even in the precipitation of new mixed solid phases of different metals with major components of concrete.

Nanoparticle-facilitated contaminant transport

Colloidal facilitated transport is an issue of concern in metallic and organic pollution of soils and aquifers. The process is also contributing to enhanced migration of contaminants from controlled landfills and repositories. The understanding of the migration processes involves the study of the surface colloid-contaminant interactions besides the assessment of the main hydrodynamics of colloidal movement in porous and fractured media. The work will be focused on those two areas.

Within both projects here proposed, the visiting student will focus on the experimental study of these mechanisms and on the application of the main conclusions and models extracted from the work to actual industrial problems in the current management of industrial and radioactive wastes.

For further information contact lara.duro@amphos21.com