

Carme Chaparro

Curriculum Vitae

Personal data

Name: M. Carme

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Education

- 09/2010–03/2016 **Ph.D. in Hydrogeology**, *Universitat Politècnica de Catalunya (UPC)*, Spain.
◦ Thermo-Hydraulic Characterization of Concrete for Storing Radioactive Waste
◦ Multiphase Flow and Heat Transport
◦ Conservative and Reactive Solute Transport
- 09/2009–09/2010 **Master in Hydrogeology**, *Fundació UPC, Universitat Politècnica de Catalunya (UPC)*, Spain.
Master Thesis at Hydrogeology Group (UPC-CSIC), Department of Geotechnical Engineering and Geosciences, Universitat Politècnica de Catalunya (UPC).
- 01/2009–07/2009 **International Course on Groundwater Hydrology (CIHS)**, *Universitat Politècnica de Catalunya (UPC)–Fundación Centro Internacional de Hidrología Subterránea (FCIHS)*, Spain.
- 09/2002–09/2007 **Degree in Geology**, *Universitat Autònoma de Barcelona (UAB)*, Spain.

Professional Experience

- 11/2017–Present **Postdoc**, *Institute for Applied Geosciences (AGW), Karlsruhe Institute of Technology (KIT)*, Germany.
- 03/2016–10/2017 **Postdoc**, *Hydrogeology Group (UPC-CSIC), Institute of Environmental Assessment and Water Research (IDAEA), CSIC*, Spain.
- 12/2014–03/2016 **Trainee Researcher**, *Hydrogeology Group (UPC-CSIC), Institute of Environmental Assessment and Water Research (IDAEA), CSIC*, Spain, Predoctoral Contract.
- 11/2010–11/2014 **Trainee Researcher**, *Hydrogeology Group (UPC-CSIC), Department of Geotechnical Engineering and Geosciences, Universitat Politècnica de Catalunya (UPC)*, Spain, Predoctoral Grant FPU-UPC.
- 09/2009–11/2010 **Research Assistant**, *Hydrogeology Group (UPC-CSIC), Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE)*, Spain, Grant for Collaboration on Technology Transfer Activities.

07/2007–12/2008 **Geologist**, *TECSÒL S.L.*, Tàrraga, Spain.

Teaching Experience

09/2010–06/2015 **Trainee Professor**, *Department of Geotechnical Engineering and Geosciences, Universitat Politècnica de Catalunya (UPC)*, Spain, Predoctoral Grant FPU-UPC.

Subject of Geology from Degree in Civil Engineering, (228.5 h.)

09/2006–06/2007 **Teaching Assistant**, *Department of Geology, Universitat Autònoma de Barcelona (UAB)*, Spain.

Subject of Mineralogy from Degree in Geology (30 h.)

Grants

11/2010–11/2014 Grant for Training University Professors (FPU) for conducting the PhD Thesis at Universitat Politècnica de Catalunya (UPC)

04/2013–05/2013 Grant for directed academic activities in support of teaching staff at public universities within the Catalan university system and at the Open University of Catalonia (AAD_2013, AGAUR)

09/2009–11/2010 Grant for Collaboration on Technology Transfer Activities, Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE)

Research Projects

2017–Present Reaktionskinetik in Reservoirgesteinen: Anwendungsbereite Aufskalierung und Modellierung (ResKin). Project funded by German Federal Ministry of Education and Research (BMBF).

2017 Reactivity of reservoir and cap rocks in the geological sequestration of CO₂. Project funded by Spanish Ministry.

2016–2017 Grimsel Test Site, Long-Term Cement Studies (LCS), Switzerland. Project funded by POSIVA (Finland), JAEA (Japan), NDA (UK), SKB (Sweden) and NAGRA (Switzerland).

2011–2012 Desarrollo de modelos termohidráulicos y de transporte para celdas RMBA y RBBA, Project funded by ENRESA (Spanish National Company for Nuclear Waste Management).

2009–2010 Desarrollo de modelos de capas de cobertura y barreras de ingeniería RMBA y RBBA del Centro de Almacenamiento de residuos radioactivos El Cabril, Project funded by ENRESA (Spanish National Company for Nuclear Waste Management).

Publications

Journal Articles

2017 **Chaparro MC**, Saaltink MW and Soler JM (2017), Reactive transport modelling of cement-groundwater-rock interaction at the Grimsel Test Site, *Physics and Chemistry of the Earth*, (99) 64–76, doi:10.1016/j.pce.2017.01.010.

- 2017 **Chaparro MC**, Saaltink MW, Soler JM and Mäder UK (2017), Reactive Transport Models of a High-pH Infiltration Test in Concrete, *Physics and Chemistry of the Earth (99)* 131-141, doi:10.1016/j.pce.2017.01.010.
- 2016 **Chaparro MC** and Saaltink MW (2016), Water, vapour and heat transport in concrete cells for storing radioactive waste, *Advances in Water Resources,(94)*120-130, doi:10.1016/j.advwatres.2016.05.004.
- 2016 **Chaparro MC**, Saaltink MW, Soler JM, Slooten LJ, Mäder UK (2016), Modelling of matrix diffusion in a tracer test in concrete, *Transport in Porous Media, 111*:27-40, DOI 10.1007/s11242-015-0579-5.
- 2015 **Chaparro MC**, Saaltink MW, Villar MV (2015) Characterization of concrete by calibrating thermo-hydraulic multiphase flow models, *Transport in Porous Media 109*:147-167, DOI 10.1007/s11242-015-0506-9.

PhD Thesis

- 2016 **Chaparro MC** (2016), Transport of Water, Vapour, Heat and Solutes in Concrete for Storing Radioactive Waste, UPC, Department of Geotechnical Engineering and Geosciences.

Conferences

- 2017 **Chaparro MC** and Saaltink MW (2017), Modelling of reactive transport, multiphase flow and double porosity in a concrete cell storing radioactive waste at El Cabril (Spain), Reactive Transport for the Earth and Environmental Sciences in the 21st Century, Amboise, France, *Poster*.
- 2017 **Chaparro MC**, Saaltink MW and Soler JM (2017), Using Reactive Transport Modelling to Analyse Cement-Groundwater-Rock Interaction. The LCS Experiment at Grimsel, Goldschmidt, Paris, France, *Oral Presentation*.
- 2017 Soler JM, **Chaparro MC** and Saaltink MW (2017), Portland Cement-Rock Interaction. Diffusion and Advection Scenarios, Goldschmidt, Paris, France, *Oral Presentation*.
- 2017 **Chaparro MC** and Saaltink MW (2017), Modelling tritium transport, matrix diffusion and multiphase flow in a concrete cell used for storing radioactive waste at 'El Cabril' (Spain) , 9th Workshop of CODE_BRIGTH Users, Barcelona, Spain, p.1-6., *Oral Presentation*.
- 2016 **Chaparro MC**, Soler JM, Saaltink MW, and Mäder UK (2016), Reactive transport and double porosity in concrete: Experiments and modelling, 4th International Workshop on Mechanisms and Modelling of Waste/Cement Interactions, Murten, Switzerland, *Poster*.
- 2016 **Chaparro MC**, Saaltink MW, Soler JM and Mäder UK (2016), Modelling of conservative and reactive solute transport of a high-pH infiltration test in concrete, 8th Workshop of CODE_BRIGTH Users, Barcelona, Spain, p.1-4., *Oral Presentation*.
- 2015 **Chaparro MC**, Soler JM, Saaltink MW, and Mäder UK (2015), Modelling of reactive transport in a high-pH infiltration test in concrete, 6th Workshop of the PhD network on Reactive Transport Modeling and Experiments, Forschungszentrum Jülich, Germany, *Oral Presentation*.

- 2015 **Chaparro MC** and Saaltink MW (2015), Multiphase flow models of concrete cells of the radioactive waste disposal facility at 'El Cabril', 7th Workshop of CODE_BRIGHT Users, Barcelona, Spain, p.1-4., *Oral Presentation*.
- 2014 **Chaparro MC** and Saaltink MW (2014), Monitorización y procesos capilares en las estructuras de almacenamiento de C.A. de El Cabril, VI Jornadas de investigación y desarrollo tecnológico en gestión de residuos radioactivos, Cuenca, Spain, *Oral Presentation*.
- 2014 **Chaparro MC**, Saaltink MW (2014), Modelling of multiphase flow in concrete cells of the radioactive waste storage facility at 'El Cabril' (Spain), 2nd International symposium on cement-based materials for nuclear waste (Nuwcem), Avignon, France, p.1-8, *Poster*.
- 2014 **Chaparro MC**, Saaltink MW, Soler JM, Slooten LJ and Mäder UK, (2014), Modelling matrix diffusion in high-pH infiltration test in concrete columns, European Geosciences Union General Assembly 2014, Vienna, Austria, *Oral Presentation*.
- 2013 **Chaparro MC**, Saaltink MW, Soler JM, Slooten LJ and Mäder UK, (2013), Modelling high-pH infiltration tests in concrete columns, 3rd Workshop of the PhD network on Reactive Transport Modeling and Experiments, Paul Scherrer Institut (PSI), Switzerland, *Oral Presentation*.
- 2013 **Chaparro MC**, Saaltink MW and Villar MV (2013), Interpretation of evaporation test in concrete columns by means of multiphase flow models, 5th Workshop of CODE_BRIGHT Users, Barcelona, Spain, p.1-4., *Oral Presentation*.
- 2013 **Chaparro MC**, Saaltink MW and Villar MV, (2013), Modelling of multiphase flow in evaporation test in concrete columns, European Geosciences Union General Assembly 2013, Vienna, Austria, *Oral Presentation*.
- 2011 **Chaparro MC**, Saaltink MW and Villar MV (2011), Modelación de flujo multifase en ensayos de evaporación en columna de hormigón, Estudios en la Zona no Saturada del Suelo, vol. 10, 205-210, *Poster*.

Technical Reports

- 2012 **Chaparro, MC** and Saaltink MW (2012), Modelación de flujo multifase y transporte de tritio de la estructura de almacenamiento RBMA, Technical Report, UPC, Department of Geotechnical Engineering and Geosciences, 60pp.
- 2010 **Chaparro, MC** and Saaltink MW (2010), Modelación termohidráulica de la estructura de almacenamiento RMBA y modelación de ensayos de evaporación de columnas de hormigón, Technical Report, UPC, Department of Geotechnical Engineering and Geosciences, 66pp.

Languages

Catalan: Mother tongue

Spanish: Mother tongue

English: Advanced level, C1

German: Low-intermediate level, B1

Other Scientific Activities

09/2012–01/2013 4.5 months stay at Institute of Geological Sciences, University of Bern, Switzerland.

- Laboratory-scale infiltration tests in concrete