

# ROMAIN TILHAC

Earth scientist | Post-doctoral researcher (IACT/CSIC, Granada)

✉ [romain.tilhac@csic.es](mailto:romain.tilhac@csic.es) |  [0000-0001-5132-6228](https://orcid.org/0000-0001-5132-6228) |  [romaintilhac.github.io](https://github.com/romaintilhac) |  [romaintilhac](https://www.researchgate.net/profile/Romain-Tilhac)

## RESEARCH INTERESTS

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My research focuses on the role of melt generation, migration and melt-rock interaction in the evolution and dynamics of the Earth's mantle. My approach combines a wide range of analytical techniques and numerical models, aiming to develop a petrologically consistent approach to *computational geochemistry*. I am notably working on the formation and recycling of pyroxenites and their impact on oceanic basalt genesis and the geochemical cycles.

## EDUCATION

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**PhD in Petrology and Geochemistry**, Macquarie University 2013 - 2017  
Co-tutelle with Paul Sabatier University (Toulouse) *Sydney, Australia*  
*"Petrology and geochemistry of pyroxenites from the Cabo Ortegal Complex, Spain"*

**BSc & MSc in Earth and Planetary Sciences**, Paul Sabatier University 2006 - 2011  
Top of the class, With honours *Toulouse, France*

## EMPLOYMENT HISTORY

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**Post-doctoral researcher *JdC Fellow*** Since 2020  
Instituto Andaluz de Ciencias de la Tierra (IACT)/CSIC, with **C. Garrido** *Granada, Spain*

**Post-doctoral researcher *JSPS Fellow*** 2020  
Kanazawa University, with **T. Morishita** *Kanazawa, Japan*

***Research Associate*** 2017 - 2019  
ARC Centre of Excellence CCFS/GEMOC, with **S.Y. O'Reilly** and **W.L. Griffin** *Sydney, Australia*  
*TerraneChron* Manager

## SCIENTIFIC SKILLS

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### Analytical techniques

- Igneous & metamorphic petrography, mineralogy (microscopy, SEM, thermobarometry, micro-thermometry)
- Mineral separation (magnetic, heavy-liquid & Selfrag disaggregation, picking)
- Wet chemistry (acid digestion, column chromatography, solvent extraction, micro-distillation)
- Major- & trace-element geochemistry (EMP, solution ICP-MS, LA-ICP-MS, mapping by LA-ICP-MSI)
- Isotope geochemistry & geochronology (analysis of radiogenic isotopes Rb-Sr, Sm-Nd, Lu-Hf, Re-Os by TIMS (Triton) & MC-ICP-MS (Nu Plasma, Neptune), U-Pb/Lu-Hf zircon dating by LA-[MC]-ICP-MS)

### Numerical techniques

- Modelling of elemental & isotopic fractionation associated with magmatic processes
- Development of diffusion, percolation-diffusion, open-system melting & mixed-source melting models
- Thermo-mecanical (reactive transport) modelling, thermodynamic modelling (pMELTS, PerpleX, Melt-PX)
- Coding languages: Matlab, Python & VBA + notions of Julia, Fortran & HTML

### Field geology

- Magmatic and metamorphic petrology of mafic & ultramafic terranes
- Field experiences: Pyrenees, Galicia, S. Spain, Italy, Czech Republic, California, Australia, Newfoundland
- Micro-tectonics, sampling, mapping

## LANGUAGES

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French (mother tongue), English (fluent, IELTS 8.0), Spanish (fluent)

## AWARDS & FUNDINGS

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<b>Research grant OCEANS (Principal Investigator)</b> “ <i>Modelling arc recycling in the oceanic mantle using radiogenic isotope systems</i> ” Spanish Ministry of Sciences, Innovation and Universities - 45 k€ (2 years)	Sept. 2022
<b>Post-doctoral fellowship <i>Juan de la Cierva (Incorporación)</i></b> Spanish Ministry of Sciences, Innovation and Universities (3 years)	Aug. 2021
<b>Post-doctoral fellowship <i>Juan de la Cierva (Formación)</i></b> Spanish Ministry of Sciences, Innovation and Universities (2 years)	Dec. 2019
<b>Post-doctoral fellowship JSPS (Short-term)</b> <i>Japan Society for the Promotion of Science</i> (1 year)	Oct. 2019
<b>PhD thesis ranked in the top 10% thesis examined by the panel</b> Macquarie University (Sydney)	Sept. 2017
<b>Doctoral iMQRES scholarship</b> International Macquarie Research Excellence Scholarship (3.5 years)	Feb. 2012

## SUPERVISION & TEACHING

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<b>H. Henry, PhD thesis</b> , Macquarie University “ <i>Mantle pyroxenites: deformation and seismic properties</i> ”	2015 - 2018 <i>Sydney, Australie</i>
<b>M. Smith, MSc thesis</b> , Macquarie University “ <i>Dating the Donkerhuk granite, Damara Orogen, Namibia</i> ”	2018 <i>Sydney, Australie</i>
<b>Teaching</b> , Macquarie University	
MSc Lectures (20h). Modelling of trace-element fractionation during magmatic processes	2017-2019
BSc Field tutoring (80h). Structural and metamorphic geology (Hill End, NSW)	2014-2015

## ACADEMIC RESPONSABILITIES & LEADERSHIP

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### Invited seminars & outreach

Goethe University (Geosciences colloquium series)	<i>Frankfurt</i> , Jan. 2023
CNRS Forsterite workshop 2021 (Modelling of crust-mantle elemental transfers)	<i>Pyrenees</i> , Oct. 2021
International Symposium DEEP 2021	<i>Nanjing</i> , Oct. 2021
University of Tokyo	<i>Tokyo</i> , Mar. 2019
Geoanalysis 2018 workshop (Application of LA-[MC]-ICP-MS to exploration needs)	<i>Sydney</i> , Jul. 2018

### Sessions convened at the Goldschmidt Conferences

“ <i>Insights on the formation, preservation and transport of mantle compositional heterogeneities</i> ”	2023
“ <i>Mantle heterogeneity: origins and contribution to magmatism and implications for mantle dynamics</i> ”	2021
“ <i>Development and recycling of chemical and isotopic heterogeneities in the sub-arc mantle</i> ”	2020

### Frequent reviewer for international scientific journals (25 reviews to date)

Geology, Journal of Petrology, Earth-Science Reviews, Contributions to Mineralogy and Petrology, Chemical Geology, Scientific Reports, Geological Society of London Special Publications, Lithos, European Journal of Mineralogy, European Mineralogical Union Notes in Mineralogy, American Journal of Science, Frontiers, Ofioliti

## TRAINING COURSES

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LA-ICP-MS imaging & its applications in petrology & volcanology (M. Petrelli, C. Stremtan, M. Šala)  
Oxygen fugacity: theory & practices in geosciences (C.A. McCammon, H.St.C. O'Neill, D.J. Frost)  
Geochemical analysis & techniques (N.J. Pearson)  
Research frontiers in geophysics and geodynamics (C.J. O'Neil)