

# Curriculum Vitae

## Mag. Dr. Ludovic FERRIERE

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Date of birth: October 21, 1982.  
Nationality: French  
Marital status: Single

## *Education*

- 1999-2000: High School Diploma in Earth Sciences.
- 2000-2003: Bachelor's degree in Earth Sciences, University of Tours, France (ranked 1<sup>st</sup>).  
Exchange year at University Laval, Quebec, Canada.
- 2003-2005: Master, Planetology (Earth and Planetary Sciences):  
\* University Pierre and Marie Curie, Paris, France.  
\* University of Nantes, France.  
*Thesis title:* Zoning in K/T boundary spinel and in spinel from meteorite fusion crusts. *Supervisors:* Dr. Eric Robin and Dr. Francois Robert.
- 2005-2009: Ph.D., Petrography-Geochemistry, University of Vienna, Vienna, Austria.  
*Thesis title:* Shock metamorphism and geochemistry of impactites from the Bosumtwi impact structure: A case study of shock-induced deformations and transformations in quartz and associated methodology.  
*Supervisor:* Dr. Christian Koeberl.

## *Research Activity – Professional Work Experience*

- 25/08–18/09/2003: Research internship at the CEREGE (Aix-en-Provence, France) with Dr. Pierre Rochette and Dr. Jérôme Gattaceca. Magnetic characterization and chemical analyses of various materials including samples from the Sirente crater (Italy) and meteorites.
- 03/05–04/06/2004: Research internship at the National Museum of Natural History (Paris, France) with Dr. Brigitte Zanda and at the University Blaise Pascal (Clermont-Ferrand, France) with Dr. Bertrand Devouard. Classification of the Tanezrouft 057 meteorite in the metamorphic series of CV/CK chondrite classes.

- Summer 2004: Field trip to Eagle Butte impact structure (Canada) with Dr. Alan Hildebrand. Discovery of shatter cones (LPSC abstract, 2005).
- 01/03–30/06/2005: Research internship at the Commissariat à l’Energie Atomique (CEA; Gif sur Yvette, France) with Dr. Eric Robin and at the National Museum of Natural History (Paris, France) with Dr. François Robert. Composition and characterization of K/T boundary spinel crystals (and spinels from meteorite fusion crusts).
- 01/07–30/09/2005: Internship at the Exploration Production Department of Gaz de France (GDF; Saint-Denis, France). Auzance 8 drilling core samples study (France).
- 02/2009–03/2010: Type descriptions of 10 new meteorites that I discovered in Egypt in 2006/2007 (work done at the National Museum of Natural History (Paris, France) together with Dr. Michèle Bourot-Denise) and curatorial work on the François Kraut Impactite Collection.
- 04/2009–09/2010: Postdoctoral Research Associate, Department of Earth Sciences, University of Western Ontario, London, Canada. Characterization of shatter cones and of other shock-metamorphic effects in minerals.  
*Supervisor:* Dr. Gordon Osinski.
- 06/2009–09/2010: Manager of the Meteorite Collection of the University of Western Ontario (London, Canada).
- 05/2009–Present : Member of the Scientific Committee of the National Nature Reserve of the Astrobleme of Rochechouart-Chassenon (France).
- 02/2011–Present : Curator of the rock collection and of the building and decorative stones collections, Natural History Museum, Vienna, Austria.
- 01/2012–Present : Co-Curator of the meteorite collection, Natural History Museum, Vienna, Austria.
- 05/2013–Present : Scientific Advisor of the Vienna International Justice Institute (VIJI).

## *Awards*

- 05–2013 Paneth Meteorite Trust Award – £1080.
- 07–2009 Barringer Student Travel Award (72<sup>nd</sup> MetSoc Meeting, France) – US\$1,000.
- 08–2008 Student Travel Award (LMI IV Meeting, South Africa) – 5,700 ZAR.
- 09–2007 LPI Student Travel Award (Bridging the Gap II workshop, Canada) – US\$700.
- 08–2007 Barringer Student Travel Award (70<sup>th</sup> MetSoc Meeting, Arizona) – US\$1,370.
- 07–2007 Student Travel Award (Kobe International School, Japan) – 175,000 JPY
- 08–2006 Student Travel Award (69<sup>th</sup> MetSoc Meeting, Switzerland) – 500 CHF.
- 06–2006 Student Travel Award (Östersund workshop, Sweden) – 1,000 SEK.

## *Research Grants and Support*

- 12–2012 Co-Investigator, Swedish Research Council, Stockholm, Sweden.  
Project title: Constraining the Ordovician impact cratering rate on a global scale – Clues to the evolution of an asteroid break-up and the terrestrial consequences. *Principal Investigator:* Dr. Carl Alwmark.

- 07–2011 Principal Investigator, National Geographic Society – Waitt Grant (W179-11).  
Project title: First exploration of the ~38 km-in-diameter Omeonga structure, the "Eye of the Democratic Republic of Congo", a possible meteorite impact structure – (US\$7,855)
- 07–2010 Co-Investigator, Canadian Space Agency, Analogue Mission.  
Project title: Impacts and Ice (I<sup>2</sup>): A lunar sample return mission to the South Pole–Aitken Basin – (815,038 CAN\$). *Principal Investigator: Dr. Gordon Osinski.*
- 10–2009 Principal Investigator, National Geographic Society – Waitt Grant (W69-09).  
Project title: Expedition to a probable meteorite impact structure in the Democratic Republic of Congo – (US\$6,450)
- 04–2009 Canadian Post-Doctoral Research Fellowship from the Department of Foreign Affairs and International Trade, Government of Canada.  
Project title: Characterization of shatter cones and of other shock-metamorphic effects in minerals – (32,000 CAN\$)
- 07–2008 Barringer Family Fund for Meteorite Impact Research.  
Project title: Formation mechanism and formation conditions of impact spinel crystals – Example of Ni-rich spinels from the K/T boundary – (US\$3,765).
- 01–2008 SYNTHESYS project funding (DE-TAF-4172)  
Project title: Characterization of ballen quartz, decorated PDFs and “toasted” quartz grains from impact rocks.

### *Participation in Conferences/Workshops*

- 2006 Lunar and Planetary Science Conference, LPSC XXXVII, Houston, USA, March 12–16, 2006.
- European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 2–7, 2006.
- 40th ESLAB, First International Conference on Impact Cratering in the Solar System, ESA, Noordwijk, The Netherlands, May 8–12, 2006.
- Workshop – Impact Craters as Indicators for Planetary Environmental Evolution and Astrobiology, Östersund, Sweden, June 8–14, 2006.
- 69th Annual Meeting of the Meteoritical Society, Zürich, Switzerland, August 6–11, 2006.
- Workshop – Signatures of an Impact – the K/T boundary in Denmark, organized by NIR, Copenhagen, Denmark, September 18–25, 2006.
- 2007 European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 15–20, 2007.
- Workshop – How impact cratering affects local geology, geochemistry, and geophysics, organized by NIR, Rättvik, Sweden, May 28–June 2, 2007.
- Workshop – Kobe International School of Planetary Sciences 2007 – The origin and evolution of planetary materials, Maiko Villa Kobe, Hyogo, Japan, July 16–20, 2007.
- 70th Annual Meeting of the Meteoritical Society, Tucson, Arizona, USA, August 13–17, 2007.

- Bridging the Gap II workshop – Effect of target properties on the impact cratering process, Saint-Hubert, Quebec, Canada, September 22–26, 2007.
- ICDP Scientific Drilling – Training Course, Windischeschenbach, Germany, November 5–9, 2007.
- 2008 European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 13–18, 2008.
- Large Meteorite Impacts and Planetary Evolution (LMI IV) Meeting, Johannesburg, South Africa, August 17–21, 2008.
- PANGEO AUSTRIA 2008 conference, Vienna, Austria, September 22–25, 2008.
- 2009 Lunar and Planetary Science Conference, LPSC XL, The Woodlands, USA, March 23–27, 2009.
- 72nd Annual Meeting of the Meteoritical Society, Nancy, France, July 13–18, 2009.
- 2010 Lunar and Planetary Science Conference, LPSC XLI, The Woodlands, USA, March 1–5, 2010.
- Impact et Rencontres Proches dans le Système Solaire – Ecole thématique du CNRS, Cussac, France, 2–8 Mai 2010.
- Workshop – Damage to target rocks during impact cratering, Oslo, Norway, June 6–8, 2010.
- 73rd Annual Meeting of the Meteoritical Society, New York, USA, July 26–30, 2010.
- Workshop – Impact cratering in the planetary system – cratering mechanisms and shock metamorphism, organized by NIR, Lappajärvi, Finland, August 29 – September 5, 2010.
- 2011 Lunar and Planetary Science Conference, LPSC XLII, The Woodlands, USA, March 7–11, 2011.
- Workshop – AsteRisk, CIAS, Meudon, France, June 28–29, 2011.
- 74th Annual Meeting of the Meteoritical Society, London, UK, August 8–12, 2011.
- Second Arab Impact Cratering and Astrogeology conference (AICAC II), Casablanca, Morocco, November 13–20, 2011.
- 2012 Lunar and Planetary Science Conference, LPSC XLIII, The Woodlands, USA, March 19–23, 2012.
- Workshop – Small impact craters – generation and modification, Gol/Gardnos, Norway, July 2–6, 2012.
- International conference on Archaeogeology of meteorite impact at Bukit Bunuh area (Lenggong, Perak), Penang, Malaysia, July 15–18, 2012.
- Workshop – Cosmochemistry of primitive bodies: the need for MarcoPolo-R - a European sample return space mission, CNES, Paris, France, December 17–18, 2012.
- 2013 76th Annual Meeting of the Meteoritical Society, Edmonton, Canada, July 29–August 2, 2013.
- Large Meteorite Impacts and Planetary Evolution (LMI V) Meeting, Sudbury, Canada, August 5–8, 2013.
- 2014 31st Nordic Geological Winter Meeting, Lund, Sweden, January 8–10, 2014.

77th Annual Meeting of the Meteoritical Society, Casablanca, Morocco, September 8–13, 2014.

### *Conference Chair and Co-chair*

- 2011 AICAC II, Casablanca, Morocco, November 13–20, 2011. Session: "Discoveries and investigations on new impact structures and prospecting".
- 2012 LPSC XLIII, The Woodlands, USA, March 19–23, 2012. Session: "Impact craters: Peaks, rings, and basins".
- 2013 76th Annual Meeting of the Meteoritical Society, Edmonton, Canada, July 29–August 2, 2013. Session: "Shock processes recorded in Earth and planetary samples".
- LMI V Meeting, Sudbury, Canada, August 5–8, 2013. Session: "Impactites: From proximal to distal".
- 2014 77th Annual Meeting of the Meteoritical Society, Casablanca, Morocco, September 8–13, 2014. Session: "Impact cratering and mass extinctions I".

### *Invited and keynote conference presentations*

Ferrière L. 2011. Recent work and confirmation of Congolese meteorite impact structure(s). AICAC II, November 13–20, 2011, Casablanca, Morocco. pp. 37–38. (Keynote Presentation in the session "Discoveries and investigations on new impact structures and prospecting").

Ferrière L. 2012. Quaternary meteorite impact craters and products: An overview. International conference on Archaeogeology of meteorite impact at Bukit Bunuh area (Lenggong, Perak), July 15–18, 2012, Penang, Malaysia. (Keynote Presentation).

Ferrière L. 2012. Definitive criteria for meteorite impact. International conference on Archaeogeology of meteorite impact at Bukit Bunuh area (Lenggong, Perak), July 15–18, 2012, Penang, Malaysia. (Keynote Presentation).

Ferrière L. 2014. Definitive criteria for meteorite impact – What to look for? 31st Nordic Geological Winter Meeting, January 8–10, 2014, Lund, Sweden. (Keynote Presentation).

### *Recent invited lectures*

Métamorphisme de choc: Déformations et transformations du quartz et méthodologies associées. (Invited lecture at the National Museum of Natural History of Paris, France) Thursday, February 26, 2009, 2:00 p.m.

Confirmation of the hypervelocity impact origin of a structure, numerical modeling, and constraints on the P-T conditions involved. (Invited lecture at the University of Toronto, Ontario, Canada) Wednesday, February 24, 2010, 4:00 p.m.

The newly confirmed Luizi impact structure (Democratic Republic of Congo). (Invited lecture at the Museum für Naturkunde of the Humboldt University Berlin, Germany) Wednesday, April 20, 2011, 11:00 a.m.

Météorites, cratères et extinctions d'espèces... (Invited lecture at the Institut Français de Vienne, Austria) Wednesday, November 23, 2011, 7:00 p.m.

Histoire de la collection historique de météorites de Vienne (Invited lecture at the 13<sup>ème</sup> Exposition-Bourse Internationale d'objets d'origine extraterrestre d'Ensisheim, France) Saturday, June 16, 2012, 3:00 p.m.

## *Journal Reviewer*

Canadian Journal of Earth Sciences (1 review; 2005).  
Earth, Moon and Planets (1 review; 2012)  
Geochimica and Cosmochimica Acta (1 review; 2007).  
Geological Society of America Special Paper (3 reviews; 2008, 2009).  
GSA Bulletin (5 reviews; 2009, 2010, 2011) – [2010 Exceptional Reviewer].  
Icarus (1 review; 2011).  
Journal of Structural Geology (1 review; 2010).  
Journal of Geophysical Research (1 review; 2012).  
Meteoritics & Planetary Science (14 reviews; 2006, 2009, 2010, 2011, 2012, 2013, 2014).  
Swiss Journal of Geosciences (1 review; 2013).

## *Technical Experiences*

**Optical microscope:** Thin section studies of terrestrial materials (mostly sedimentary, metamorphic, and impact related rocks) and of meteorites.

+ **Universal-stage** (mostly used to characterize PDFs in quartz grains in impactites).

**Scanning Electron Microscopy (SEM):** Mainly used for examining textural, mineralogical, and petrological details (mostly in impactites, in meteorites, and in K/T spinel crystals).

+ **Mono-cathodoluminescence attached to SEM.**

**Electron microprobe (CAMECA SX50 and SX100; JEOL JXA-8500F):** Geochemical analyses of various minerals in meteorites sections.

**Transmission Electron Microscopy (TEM):** Observations and characterization of microstructural characteristics of PDFs in quartz, ballen quartz/cristobalite, and coesite.

+ Used of the Focused Ion Beam (FIB) technique for the preparation of TEM foils.

**MicroRaman spectroscopy:** Used for the purpose of mineralogical identification and characterization of unknown phases; characterization of silica polymorphs in impactites.

**Inductively Coupled Plasma Atomic Emission Spectrophotometry (ICP-AES):** Geochemical analyses of terrestrial rocks (from Sirente crater, Italy).

**Instrumental Neutron Activation Analysis (INAA) and X-ray fluorescence (XRF):** Analysis of more than one hundred impactite samples for my PhD thesis.

**Laser-ablation HR MC-ICP Mass Spectrometer:** In-situ high-precision U-Th-Pb dating of zircon grains.

**Magnetic properties** of rocks and soils using a Superconducting rock magnetometer (DC SQUID; Model 2G760), a Vibrating Sample Magnetometer (VSM; Micromag 3900), a Kappabridge (KLY2), and a SM30 magnetic susceptibilitymeter.

## *Languages*

French: Mother tongue  
English: Read, spoken, and written, good knowledge  
German: Basic knowledge, reading  
Spanish: Basic knowledge, reading

## *Hobbies – Personal interests*

- Passion for impact cratering (field trips to Rochechouart (France), the Ries and Steinheim (Germany), the Charlevoix, Manicouagan, Presqu'Ile, Sudbury, Holleford, and Eagle Butte (Canada), Chicxulub (Mexico), Siljan and Lockne (Sweden), Meteor Crater (USA), Vredefort and Tswaing (South Africa), Luizi (Democratic Republic of Congo), Gardnos and Ritland (Norway), Lappajärvi, Keurusselkä, and Söderfjärden (Finland), etc.).
- Collection of rocks, minerals and books on Sciences of the Earth and the Universe.
- Genealogy (very advanced research) & Local History.
- Photography
- Sports: Roller-blades, Hiking, Bike,...