Mr. Pierre-Marie ZANETTA

Astromineralogy - Cosmochemistry – Data processing – Electron microscopy

Physics PHD

Thesis summary
Matrix of primitive chondrite are constituted by an entanglement of fine grained material showing a strong heterogeneity at the micrometer scale. This heterogeneity make it difficult to analyze by conventional techniques. In this thesis we developped a new method that enables high resolution mineralogical classification. Thanks to this new method we succeed to better constrain the formation of the fine grained rims in different chondrites and to improve our understanding of the accretion of the firsts asteroids.

Contact

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Born: 9 sept 1993 at
Courcouronnes France

Abilities

Instrumental:
SEM and TEM expert
X spectroscopy – IR Spectroscopy
Basic notion of ion probe

Software:
Office package, ArcGis, Adobe, Digital Microscope, TIA, Velox, Aztech, Brucker, Github, Hyperspy

Programming Languages:
Matlab/scilab and Python expert
Basics in Fortran and HTML

Languages:
English and french
Basics in German

Hobbies

Non –academic graduation:
Graduate of the academy of music Claude Debussy in percussion instrument and transverse flute

Sports:
Fencing, judo, montain bike, hiking

Leisures:
Woodworking, electronics montage, astro-photography

PROFESSIONAL EXPERIENCE

2019/ 2016 — **PHD thesis,** UMET Laboratory Lille & Paris Museum (MNHN) – Advisors *: Hugues Leroux (UMET) and Brigitte Zanda (MNHN) Co-advisor: Corentin Le Guillou (UMET).* Advanced electron microscopy methodologies for the study of the formation of the first solids in the solar system.

2014/ 2013 — **IMPRO Léopold BELLAN de Vayres (91)** Maintenance staff

2012 — **McDonald's de Massy le Pileu (91)** Polyvalent staff

FORMATION

2016 — Graduated of the **Planetology and spatial exploration master** with distinction – first of the class – at the Paris Sud XI University (Orsay 91)

2015 — Graduated of the **Earth and planetary science master** – with distiction – first of the class - at the Paris Sud XI University (Orsay 91)

2014 — Graduated of **Geosciences bachelor** – with distinction - second of the class – at Paris Sud XI University (Orsay 91)

RESEARCH INTERNSHIP

2016 — **Master internship:** Development of a new method for the study of the matrix of carbonaceous chondrite, application to a new sample the LMAB chondrite**. A**dvisor*: Brigitte ZANDA*

2015 — **Master internship:** Geomorphologic study of the periglacial structure on the Mars surface during the Noachian-Hesperian period (4,5-3,5 Ga): implication for early climatic conditions. Advisor*: Antoine Séjourné*

2015/ 2011 — **Field training:** 8 fields placement in various specialty. Sedimentology, geomorphology, structural geology, volcanology. One field placement at the Haute Provence observatory.

PAPERS

2019 Zanetta P.-M., Le Guillou C., Leroux H., Zanda B., Hewins R., Lewin E. and Pont S. (2019) Modal abundance, density and chemistry of micrometer-sized assemblages by advanced electron microscopy: Application to chondrites. Chemical Geology 514, 27–41. https://doi.org/10.1016/j.chemgeo.2019.03.025

2019 Hewins R., Zanda B., Pont S. and Zanetta P.-M. (2019) Northwest Africa 10414, a pigeonite cumulate shergottite. Meteoritics & Planetary Science 54, 2132–2148. https://doi.org/10.1111/maps.13374

COMMUNICATIONS

Oral communications

2019 Zanetta P.-M., Le Guillou C., Leroux H. and Zanda B. (2019) Accretion of Dust to Make Fine-Grained Rims on Still Cooling Chondrules. *82nd Annual Meeting of The Meteoritical Society.*

2019 Hewins R., Zanetta P.-M., Zanda B., Le Guillou C., Gattacceca J., Sognzoni C., Pont S., Piani L., Rigaudier T., Leroux H. and others (2019) Northwest Africa 12563 CM2-AN, and the Different Alteration Styles in C2 Chondrites. *82nd Annual Meeting of The Meteoritical Society.*

2019 Le Guillou C., Zanetta P., Leroux H., Brearley A., Zanda B. and Hewins R. (2019) Amorphous Silicates in Carbonaceous and Ordinary Chondrites. *82nd Annual Meeting of The Meteoritical Society*.

2019 Zanetta P. M., Le Roux H., Le Guillou C. and Zanda B. (2019) Comparison of the mineralogy of fine-grained rims and adjacent matrix in the CM Paris chondrite using advanced electron microscopy. *Museum of Paris workshop.*

2018 Zanetta P.-M., Leroux H., Le Guillou C., Manda B., Hewins R., Lewin E. and Pont S. (2018b) Modal Abundance, Chemistry and Density of Chondrites Fine Grained Materials by Advanced Electron Microscopy. *81th Annual Meeting of The Meteoritical Society*.

2018 Zanetta P.-M., Leroux H., Le Guillou C. and Zanda B. (2018a) Mineralogy of Fine Grained Rims and Inter-Chondrules Matrix in the Paris CM Chondrite. *81th Annual Meeting of The Meteoritical Society*.

2017 Zanda B., Zanetta P.-M., Leroux H., Le Guillou C., Lewin E, Pont S., Deldicque D. and Hewins R. (2017) The Chondritic Assemblage. *Chondrules and the Protoplanetary Disk.*

2017 Zanetta P. M., Le Roux H., Le Guillou C. and Zanda B. (2017) Investigation of fine-grained rims in primitive chondrite using advanced electron microscopy analysis. *Elbereth conference.*

2017 Zanetta P.-M., Leroux H., Le Guillou C., Zanda B., Hewins R., Lewin E. and Pont S. (2017) A new method for modal abundance, chemistry and density determination of fine grained matrices of primitive chondrites. *80th Annual Meeting of the Meteoritical Society.*

2016 Zanetta P. M., Le Roux H., Le Guillou C., Zanda B., Hewins R., Lewin E. and Pont S. (2016) Development of a multiple component analysis approach for the characterization of matrices of primitive chondrites. *Elbereth conference.*

Poster presentation

2018 Le Guillou C., Le Roux H., Zanetta P. M., Brearley A., De La Pena F. and Marinova M. (2018) Water Content in Amorphous Silicates of Chondrite Matrices Determined by Advanced TEM Analysis: And Scanning Transmission X-Ray Microscopy. *Lunar and Planetary Science Conference.*

2018 Zanetta P. M., Le Roux H., Le Guillou C. and Zanda B. (2018) Development of an Advanced Electron Microscopy Methodology: Comparison of the Mineralogy of Fine-Grained Rims and Adjacent Matrix in the CM Paris Chondrite. *Lunar and Planetary Science Conference.*

TEACHING

2019/ 2017 Monitoring at the University institute of technology in physical measurement 1rst year. Practicals in « Sensors » and « materials properties »

2019/ 2017 Educational support during the open university days (SEM and TEM introduction).

SCIENTIFIC MEDIATION

2019 Animation member of the « 1,2,3 cherchez ! » event organized in the « cité des sciences et de l'industrie » by Fripon and Vigie Ciel.

2019/ 2016 Establishment of « les p'tits cueilleurs d'étoiles » (the little pickers of stars) in Lille city. Animations based on the astronomy and planetology thematic are proposed in hospital to relieve the hospitalization of kids.

2019/ 2018 Involved member of the Universciel association since Jan. 2018 and participant of the Astro-jeunes Festival (Fleurance).

2018 Invited in "Radio campus Paris" for an interview on the meteorites and my research field in the "In situ emission" (~1h).

2016 Participation to the conception, the realisation and the animation of the « Planétaire du jardin des plantes ». Representation of the internal part of our solar system where people can move following the orbit of the different objects.