Dr. Benjamin FLEURY

Jet Propulsion Laboratory, California Institute of Technology
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Education

2012-2015: Ph.D. in Planetary Science, University of Versailles St-Quentin (France).

2010 - 2012: M.Sc., in Atmospheric Science, University of Orleans (France)

2007 - 2010: B.Sc. in chemistry, University of Orleans (France).

Research experience

Current position: Postdoc at Jet Propulsion Laboratory (Caltech postdoctoral fellow)
Laboratory experimental studies on simulated Titan and Europa surface materials and their radiation-induced chemistry.

2012-2015: Ph.D. Student in planetary science, LATMOS (University of Versailles St-Quentin)

Title: *The upper atmosphere of the early Earth, a source of prebiotic organic compounds*
Advisors: Dr. Nathalie Carrasco and Dr. Murthy Gudipati

- Experimental simulation of the chemical reactivity of the early Earth's atmosphere and the Titan's atmosphere.
- Experimental simulation of the chemical evolution of the Titan's aerosols.

Internships:

June-August 2012: Jet Propulsion Laboratory (NASA/CALTECH): "Photochemistry of condensates on Titan's tholins surfaces". Advisor: Dr. Murthy Gudipati

Mars-June 2012: LATMOS (University of Versailles St-Quentin): "Experimental study of Titan's atmospheric reactivity". Advisor: Dr. Nathalie Carrasco

April-July 2011: LATMOS (University of Versailles St-Quentin): "Experimental study of CO influence on Titan's atmospheric reactivity". Advisor: Dr. Nathalie Carrasco

Teaching experience

2013 - 2015: Teaching assistant at the University of Versailles St-Quentin (64 h/year)

- Laboratory session for first year students in physics
- Physics tutorials for first year medicine students

Skills

Languages: French (native), English (fluent)
Informatics: MATLAB, Python, HTML/CSS.
Laboratory techniques: Vacuum system, Cryogenic technique, Plasma, Synchrotron radiations, Laser, Mass spectrometry, GC-MS, FTIR spectroscopy

Refereed journal articles

1) Mahjoub A., Carrasco N., Dahoo P.-R., **Fleury B.**, Gautier T., Cernogora G, *Effect of the Synthesis Temperature on the Optical Indices of Organic Materials Produced by N2-CH4 RF Plasma*, Plasma Processes and Polymers 11, 5 (2014), 409-417.

2) M. Kuga, N. Carrasco, B. Marty, Y. Marrocchi, S. Bernard, T. Rigaudier, **B. Fleury** and L. Tissandier, *Nitrogen isotopic fractionation during abiotic synthesis of organic solid particles*, Earth and Planetary Sciences Letters 393 (2014) 2-13.

3) **B. Fleury**, N. Carrasco, T. Gautier, A. Mahjoub, J. He, C. Szopa, E. Hadamcik, A. Buch, G. Cernogora, *Influence of CO on Titan atmospheric reactivity*, Icarus 238 (2014), 221-229.

4) **B. Fleury**, N. Carrasco, E. Marcq, L. Vettier and A. Määttänen, *Water formation in the upper atmosphere of the early Earth*, (2015), ApJL, 807 (2), L29.

Conferences

1) **Fleury B.**, Carrasco N., Gautier T., Mahjoub A., Cernogora G., *On the infuence of CO on a dusty N2-CH4 CCP RF discharge*, (2012), poster, ESCAMPIG 2012 (Europhysics Conference on the Atomic and Molecular Physics of Ionized Gases), Viana do Castelo, Portugal.

2) M. Kuga, N. Carrasco, B. Marty, Y. Marrocchi, T. Rigaudier, **B. Fleury**, L. Vettier and G. Cernogora, *Nitrogen isotopic fractionation during tholins' synthesis : hints about the origin of Titan's aerosols?*, (2013), poster, 44th Lunar and Planetary Science Conference (LPSC), The Woodlands, Etats-Unis.

3) Gautier T., Carrasco N., Szopa C., Mahjoub A., **Fleury B.**, Dahoo P.-R., Hadamcik E., Cernogora G., *Comprendre la formation et les propriétés des aérosols de Titan en laboratoire avec l'expérience*

PAMPRE, (2013), oral, 22ème Congrès Général de la Société Française de Physique, Marseille, France.

4) **B. Fleury**, N. Carrasco et G. Cernogora, *Study of the early Earth atmospheric reactivity by experimental simulation*, (2013), oral, Exobiologie Jeunes Chercheurs (EJC13), Paris, France.

5) **Fleury B.**, Carrasco N., Gautier T., Mahjoub A., He J., Szopa C., Buch A., Cernogora G., *Influence of CO on Titan atmospheric reactivity*, (2013), oral, American Geophysical Union, Fall Meeting 2013, San Francisco, Etats-Unis.

6) **B. Fleury** and N. Carrasco, *Laboratory simulation of the early Earth upper atmospheric reactivity*, (2014), oral, European Planetary Science Congress 2014, Viana do Castelo, Portugal.

7) Gudipati M. S., Couturier-Tamburelli I., **Fleury B.**, Carrasco N., Lignell A., Jacovi R., *Photochemical Evolution of Condensed Organics in Titan's Lower Atmosphere and on the Surface*, (2015), oral, Astrobiology Science Conference 2015 (AbSciCon 2015): Habitability, Habitable Worlds, and Life, Chicago, United States.

8) **Fleury B.**, Vettier L., Carrasco N., *Organic chemistry in the ionosphere of the early Earth*, (2015), oral, European Planetary Science Congress 2015, Nantes, France.

9) **Fleury B.**, Carrasco N., Gudipati M. S., *Photochemistry of condensed species on Titan's aerosols analogues*, (2015), oral, European Planetary Science Congress 2015, Sep 2015, Nantes, France.

10) Gudipati M. S., Henderson B. L., **Fleury B.**, Carrasco N., Rivas N., Couturier-Tamburelli I., Vuitton V., *Radiation-induced near-surface atmospheres of Europa and Titan*, (2015), oral, European Planetary Science Congress 2015, Nantes, France.

11) Tigrine S., Carrasco N., Mahjoub A., **Fleury B.**, Cernogora G., L. Nahon, Pernot P., Gudipati M. S., *Evolution of Titan's atmospheric aerosol under high-altitude ultraviolet irradiation*, (2015), poster, European Planetary Science Congress 2015, Nantes, France.