



Laboratoire Atmosphères, Milieux, Observations Spatiales



Recommendation for Audrey CHATAIN

I am writing this letter to provide my strongest support to Audrey Chatain.

I know Audrey Chatain since September 2016, when she began her second year of master in planetary sciences. As her teacher, I presented the research issues related to Titan's atmosphere and its smog. Audrey directly came to me after class to ask for an internship on that topic. She is actually very determined and passionate about atmospheric science. I supervised her intensive work, first during the master internship, then during her PhD. In the nearly four years I have worked with Audrey Chatain, she has demonstrated that she is an outstanding scientific researcher, and I have been **extremely impressed with her scientific skills, her determination, breadth, and innovation potential. Audrey Chatain is by far the best PhD student who I have ever supervised.**

Audrey Chatain's research focuses on the study of the interactions between the nanometer-size Secondary Organic Aerosols and the surrounding plasma in Titan's upper atmosphere. These complex heterogeneous processes are complex and very few documented. To tackle this question, she developed an original multi-approach strategy combining laboratory work (for that purpose she developed on her own an innovative reactor simulating the atmospheric erosion process) and space data treatment (international collaboration with the team in Uppsala Sweden PI of the Langmuir probe instrument onboard Cassini). For each subject she addressed, she impressively brought the science significantly further than the work done by the scientific community before her, both in plasma and in atmospheric sciences. Her work opens brand new perspectives on our understanding of the formation and evolution of organic dust particles on Titan. **Her pioneer work led already to 7 articles, published and in preparation, and to numerous well noticed oral presentations at international conferences.**

But most of all, Audrey Chatain is a generous and passionate young woman, cooperative with her knowledge and time, who enjoys the transmission of knowledge. During her PhD she supervised the internships of two master students, Maryse Napoleoni in 2018 and Zoé Perrin in 2019, and she taught 192 hrs at the University for undergraduate and graduate students. She is also an amateur astronomer, who is always a volunteer to organize astronomical observation events everywhere in France. She jointly organized monthly seminars in the laboratory to emulate transversal scientific animation within LATMOS and she organized the Elbereth conference in 2018 dedicated to all astrophysics PhD students in the Ile de France region.

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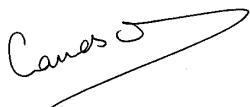
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In summary, Audrey Chatain is an outstanding early career scientist, one of the best I have ever worked with, who is incredibly creative, and with enormous breadth. She produces timely, insightful, interdisciplinary work of the highest quality, scientific rigor and importance. She has been an incredibly valuable and likeable member of my team, and I therefore very warmly recommend her for a permanent research position at CNRS.

Nathalie Carrasco

Professor in Atmospheric Science at the University of Paris-Saclay
Junior member of the Institut Universitaire de France
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