

**Name:** Victoria Da Poian

**Pronouns:** She/her/hers

**Code:** 699

**Home institution:** Southeastern University Research Association (SURA)  
CRESST

**Name of task:** Visiting Scientist in the Planetary Environment Laboratory (NASA Goddard) working on flight missions (MOMA for ExoMars mission, Dragonfly mission) and astrobiology research project

**What do you do for CRESST:**

I am a visiting scientist for the Planetary Environment Laboratory (code 699 at NASA Goddard). I have several tasks in the team. I am developing machine learning and data analysis tools for planetary missions (ExoMars, Dragonfly), mainly focusing on mass spectrometry data. I am also in charge of laboratory experiments using Laser Desorption Mass Spectrometry and Gas Chromatography Mass Spectrometry for the same missions (ExoMars and Dragonfly) and also for an astrobiology project that aims at developing methods and process to agnostically detect biosignatures.

**What is your background:**

I grew up in Indian Ocean, Eastern Europe and France. I am a French aerospace engineer with computer science background, and since I was a child, I have been passionate about space exploration fields. I earned my bachelor's degree in aerospace engineering and physics in 2016 and my master's degree in aerospace engineering from ISAE Supaero in Toulouse in 2019 after having completed my master thesis at NASA Goddard Space Flight Center. During my 4 years study I had many international experiences for internships and exchanges (internship at ESA in Germany, exchange student in Moscow, internship at CNES CSG in French Guiana). During my final year I specialized in spacecraft design and operations as well as Earth observation and universe science. In parallel I obtained a certificate in Neuroergonomics and Human Factors for Transportation and a certificate in business engineering and functional areas of management.

**Favorite part of being a CRESST Scientist:**

I really enjoy both the science part of my job and the engineering one. I am involved in various projects as a CRESST scientist, that enables me to learn and to grow every day. I am collaborating with mass spectrometer experts, flight instrument software teams, scientists, engineers, computer scientists and am able to learn about a wide range of fields related to space exploration. I also really enjoy working in the laboratory on Titan's analogs and having hands on experience. I am really lucky to be part of such a great group and to be working with the people I work with at Goddard!



### **Highlight of research as a CRESST Scientist:**

Finding ways to apply terrestrial datasets to planetary research questions. In recent years there have been great advances in the geophysical data collected in my study region in Antarctica, though these datasets were collected with the primary goal of advancing Earth Science, rather than Planetary Science. My research involves finding ways to optimize the use of these new datasets to advance understanding of distant icy bodies, which is challenging, exciting, and very rewarding.

### **Some of my publications, presentations, conferences etc.**

10/2020 Da Poian V. E. Lyness, M. G. Trainer, X. Li, W. B. Brinckerhoff, R. M. Danell. Science Autonomy and Intelligent Systems on the ExoMars Mission. The International Symposium on Artificial Intelligence, Robotics and Automation in Space 2020, Virtual, Poster presentation.

09/2020 "Artificial Intelligence/Machine Learning and Space Exploration (NASA missions)." Big Data and AI Corp Conference, Toronto, Oral presentation.

09/2020 Da Poian V. E. Lyness, M. G. Trainer, W. B. Brinckerhoff, R. M. Danell, X. Li. Science Autonomy and Intelligent Systems on the ExoMars Mission. Europlanet Science Congress 2020, Virtual, Oral presentation.

06/2020 Da Poian V. E. Lyness, W. B. Brinckerhoff, R. M. Danell, X. Li, M. G. Trainer. Science Autonomy and the ExoMars Mission: Machine Learning to Help Find Life on Mars. Goldschmidt Conference, Virtual, Oral presentation.

06/2020 Da Poian V. E. Lyness, W. B. Brinckerhoff, R. M. Danell, D. A. Kaplan, X. Li, M. G. Trainer. Science Autonomy and the ExoMars Mission: Machine Learning to Help Find Life on Mars. American Society for Mass Spectrometry, Virtual, Poster presentation.

06/2020 Da Poian V. Chou L., Grefenstette N., Graham H., Kempes C., Mahaffy P., Johnson S. Agnostic Polymer Detection Using Mass Spectrometry for Astrobiological Samples. American Society for Mass Spectrometry, Virtual, Poster presentation.

12/2019 M. G. Trainer, C. Szopa, C. Freissinet, V. Da Poian, X. Li, A. Grubisic, R. M. Danell, A. Buch, W. B. Brinckerhoff, M. L. Cable and S. M. Horst. Detection of Prebiotic Molecules in Titan Analog Materials in support of the Dragonfly Mass Spectrometer Investigation. American Geophysical Union Fall Meeting, San Francisco, California, Poster presentation.

09/2019 C. Szopa, M. G. Trainer, C. Freissinet, A. Grubisic, x. Li, A. Buch, W. Brinckerhoff, V. Da Poian and the DraMS experiment team. Strategies for detecting molecules of prebiotic relevance at the surface of Titan using proven flight instrumentation approaches. Titan after Cassini-Huygens Workshop, Madrid, Spain, Oral presentation.

09/2019 F. H. W. van Amerom, M. Castillo, A. Grubisic, R. M. Danell, S. S. Larson, D. A. Kaplan, X. Li, V. Da Poian, S. A. Getty, W. B. Brinckerhoff, and the MOMA Team. Overview of the MOMA Mass Spectrometer and Examination of Some Mineral Matrices as Learning

Curve for MOMA Return Data. Harsh Environments Mass Spectrometry Workshop, Myrtle Beach, South Carolina, Poster presentation.

11/2019 V. Da-Poian, R. N. Lewis, J. Cirillo, E. Lyness, M. G. Trainer, X. Li, A. Grubisic, R. M. Danell and the MOMA Team. Applying Machine Learning to MOMA Mass Spectrometer Science Data for Scientific Autonomy and Patterns Recognition. Young Professionals, Students, and Educators Conference, Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland, Oral presentation.

**List of awards won:**

ISAE SUPAERO "Passion for Space" award in December 2019 by the French number one aerospace engineering university to reward an engineering student who demonstrated eagerness and great interest in aerospace field.

Aerospace Vocation Awarded in 2018 by the TOMATO (aerospace association) to reward an engineering student who demonstrated eagerness and remarkable human qualities.

CNES Fellowship awarded by the Centre d'Etudes Spatiales (CNES) and SGAC for IAC 2018 (Bremen).

ISU Fellowship awarded by the European Space Agency (ESA) and the CNES for SSP program at ISU (2020).

Space Station Design Project Second Prize, as head of the space station structure team at 2017

Space Station Design Workshop, for designing a space station for Mars vicinity for 2021.

Toulouse City Award of Toulouse city (2017), meant to reward a student willing to follow an excellence program abroad.

**To Contact Victoria to learn more about her work or collaboration, she can be reached at:**  
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