

Jeffrey Tyler Foster
Jet Propulsion Laboratory
Email: Jeffrey.T.Foster@jpl.nasa.gov

Education

La Canada High school, California
GPA: 4.0; Graduation: June 2008

University of California Irvine, School of Physical Sciences
GPA: 3.4; Graduation: June 2012
Major: Earth and Environmental Sciences
Minor: Global Sustainability
Minor: History

Experience

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

NASA Space Grant Award 2008

Working with Dr. Geoffrey Toon on aircraft and balloon Fourier Transform Infrared (FTIR) spectrometers for observations of atmospheric composition:

- Plotting empirical solar line lists
- Mounting and positioning mirrors for JPL's Light Weight Interferometer
- Updating and organizing data on the Mark IV website.

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

NASA Space Grant Award 2009

Working with Dr. Richard Kidd on advanced gas chromatography for planetary missions:

- Installation and testing of a MEMS-GC (micro electro-mechanical systems gas chromatograph)
- Preparing and testing gas sample bags containing combinations of organic chemicals
- Creating 3-D images of the MEMS-GC using AutoCAD 2010

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

NASA Space Grant Award 2011

Working with Dr. Robert Carlson and Dr. Kevin Hand in the Planetary Ices Group:

- Building and running a Fourier Transform Infrared (FTIR) spectrometer
- Designing and building a water atomizer to replicate ice grain sizes similar to the surface of Europa, one of Jupiter's moons
- Creating and gathering spectra of ice samples of varying organic compound mixtures

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

NASA Space Grant Award 2012

Working with Dr. Robert Carlson, Dr. Kevin Hand and Dr. Daniel Berisford in the Planetary Ices Group:

- Continued work with the Fourier Transform Infrared (FTIR) spectrometer
- Improving methods with water atomizer to replicate ice grain sizes similar to the surface of Europa

- Creating and gathering spectra of ice samples of varying organic compound mixtures
- Creating and gathering spectra of solid samples of varying grain size processed by a micronising mill
- Gathering mid-infrared spectra of Alaskan lake sediments
- Building and testing an under-ice rover prototype for future use in Alaskan lakes

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

Research Technician March 2013- 2017

Working with Dr. Robert Carlson, Dr. Kevin Hand and Dr. Daniel Berisford in the Planetary Ices Group:

- Fabrication and operation of radio controlled kite mounted camera and underwater pole mounted video camera with surface station
- Operation of Fourier Transform Infrared (FTIR) spectrometer to gather spectra of Chelyabinsk meteorite sample, Mars clay simulant, fossil fragments and ice samples of varying organic compound mixtures
- Team member on Fall 2013 Barrow Alaska field campaign
- Coordinating laboratory renovations and general laboratory upkeep/ administration
- Atomized spherical H₂O ice experiments under vacuum
- Testing of prototype FTS and detectors under radiation
- Europa landed element concept research

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

Dynamitron Operator April 2015- current

Working with Cognizant Engineer Dennis Thorbourn in the Radiation Effects Group on Particle Accelerator.

- Operation of high power electron beam (up to 3 MEV)
- Maintenance of accelerator chamber
- Rebuilding transformer and vacuum tube system
- Upgrade of accelerator vessel: solid state rectifiers and new control system
- Europa Clipper solar array testing

NASA Jet Propulsion Laboratory (JPL), Pasadena, CA

Technologist I April 2017- current

Working with Dr. Kevin Hand, Dr. Amy Hofmann and Dr. Daniel Berisford in the Icy Worlds Laboratory:

- Design, fabrication, assembly and operation of liquid-jacketed environmental chambers, dubbed “Stockpots” for a series of illuminated ice surface morphology experiments
- Assembly and operation of high vacuum environmental chamber, the “ARK”, for simulating Europa’s diurnally illuminated surface for morphological change observation

