

# Daniel A. Petrizzo

Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, CA 91109  
Mobile: (626) 720-1484  
E-mail: [Daniel.a.petrizzo@jpl.nasa.gov](mailto:Daniel.a.petrizzo@jpl.nasa.gov)

## EDUCATION

University of California, Los Angeles  
Ph.D., Geology (Paleobiology), June 2013

University of California, Los Angeles  
Coursework equivalent to B.S., Geology, 2004-2007. Degree not pursued.

University of Florida, Gainesville, Florida  
B.A., History, May 1996

## RESEARCH EXPERIENCE

### *Caltech Postdoctoral Fellow*

Jet Propulsion Laboratory, Pasadena  
February 2014 to present  
Stable isotope geochemist in planetary Chemistry and Astrobiology

### *Principal Investigator*

University of California, Los Angeles  
September 2007 – June 2013  
Dissertation title: Development of Carbonate Clumped-Isotope paleothermometry for Application to Paleozoic Fossils

## TEACHING EXPERIENCE

*Instructor - Dinosaurs and Their Relatives (ESS 17)*  
University of California, Los Angeles - Summer 2012 and 2013

*Teaching Assistant – Paleontology (ESS 116)*  
University of California, Los Angeles - Winter quarter 2008, 2009, 2010, 2011 and 2012

*Teaching Assistant – Introduction to Oceanography (ESS 15)*  
University of California, Los Angeles - Fall quarter 2007, Spring quarter 2008 and 2011

*Teaching Assistant – Astrobiology (ESS 3)*  
University of California, Los Angeles - Fall quarter 2011

## ACADEMIC AWARDS

W. Gary Ernst Fellowship for Geochemistry (2011)

UCLA Earth and Space Sciences Excellence in Teaching Award (2008, 2009, 2010, 2011)

NASA Astrobiology Institute Scholarship for “Mars Exploration: The next ten years”, Santander, Spain (2007)

## **ANALYTICAL SYSTEMS DESIGNED AND BUILT AT JPL'S ASTROBIOGEOCHEMISTRY LABORATORY (abcLab)**

1) On-line system to extract, quantitatively reduce, and analyze hydrogen isotopes within structural water of clay and hydrous minerals via irMS. In operation and currently deployed to “ground truth” measurements of stable isotope ratios in Martian minerals that were made by MSL's Tunable Laser Spectrometer (TLS).

2) “Nano-EA”. An expansion/modification of a commercially available Elemental Analyzer that improves sensitivity by three orders of magnitude. This system is the first to allow users to switch from large samples ( $< 1 \times 10^{-3}$  mol C) to small samples ( $> 5 \times 10^{-9}$  mol carbon) by simply actuating a valve. In operation and currently deployed to measure  $\delta^{13}\text{C}$  within individual acritarchs that contain  $< 10$  nmols of carbon.

## **PUBLICATIONS, PRESENTATIONS AND POSTERS**

**Daniel A. Petrizzo**, Edward D. Young and Bruce N. Runnegar (2014). Implications for high-precision measurement of  $^{13}\text{C}$ - $^{18}\text{O}$  bonds in  $\text{CO}_2$  and effects on carbonate clumped- isotope thermometry in modern bivalved mollusc shells. *Geochim. Cosmochim. Acta.* 142, 400-410.

**Daniel A. Petrizzo** and Edward D. Young (2014). High-precision determination of  $^{13}\text{C}$ - $^{18}\text{O}$  bonds in  $\text{CO}_2$  using multicollector peak hopping. *Rapid. Comm. Mass Spectrom.* 28, 1185-1193.

Raymond V. Ingersoll, Mark J. Pratt, Paul M. Davis, Luca Caracciolo, Paul P. Day, Paul O. Hayne, **Daniel A. Petrizzo**, David A. Gingrich, William Cavazza, Salvatore Critelli, David S. Diamond, Kevin T. Coffey, Dallan M. Stang, Johanna F. Hoyt, Robin C. Reith, and Eric D. Hendrix. Paleotectonics of a complex Miocene half graben formed above a detachment fault: The Diligencia basin, Orocochia Mountains, southern California. Submitted to *Geosphere* July 2013.

**Daniel A. Petrizzo**, Bruce Runnegar, Edward D. Young and Linda C. Ivany (2011). Clumped Isotope Temperatures From Known And Proposed Paleozoic Glacial Intervals Suggest That Oceans Were Depleted in  $\delta^{18}\text{O}$ . Oral presentation, AGU Fall Meeting 2011, San Francisco, California. Reviewer score: 48/50.

**Daniel A. Petrizzo**, Bruce Runnegar, Edward D. Young (2011). A “Direct” Method for Measuring  $\Delta_{47}$  in Calcitic Fossils Indicates Cold Tropical Sea Surface Temperatures During a Large Silurian  $\delta^{13}\text{C}$  Excursion. Oral presentation, Clumped Isotope Workshop, Imperial College London.

**Daniel Petrizzo**, Per Jögi, and Bruce Runnegar (2008). Were galactic cosmic rays responsible for the global cooling associated with three major Paleozoic mass extinction events? Poster presented at Astrobiology Science Conference, Santa Clara, California.

## **REFERENCES**

### **Kenneth Williford**

Jet Propulsion Laboratory – Planetary Chemistry and Astrobiology  
4800 Oak Grove Drive, M/S 183-300  
Pasadena, CA 91109  
E-mail: [Kenneth.H.Williford@jpl.nasa.gov](mailto:Kenneth.H.Williford@jpl.nasa.gov) Phone: (626) 429-3528

### **Professor Bruce N. Runnegar**

University of California, Los Angeles  
595 Charles Young Drive East, Room 5661  
Los Angeles, CA 90095-1567  
Email: [runnegar@ucla.edu](mailto:runnegar@ucla.edu) Phone: (310) 267 - 1738

### **Professor Edward D. Young**

University of California, Los Angeles  
595 Charles Young Drive East, Room 2676  
Los Angeles, CA 90095  
Email: [eyoung@ess.ucla.edu](mailto:eyoung@ess.ucla.edu) Phone: (310) 267 – 4930