

# EMMA CROW-WILLARD

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## CAREER INTEREST

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Alternative Energy and Global Warming Prevention Research

## EDUCATION

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**Occidental College** Class of 2011, Los Angeles, CA

Majors: Geology, Theater

Minor: Math

GPA 3.6/4.0

Dean's Scholarship

**Bates College**, Lewiston, ME

September 5, 2006 through May 25, 2007

GPA 3.7/4.0

Dean's List

## RELEVANT COURSEWORK

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Differential Equations; Multivariable Calculus; Waves; Programming in JAVA; Calculus II; Linear Algebra; Newtonian Mechanics; Cosmology in the 20th Century; Lunar and Planetary Sciences; Logic; Geology of the Maine Coast; Classical and Modern Physics; Statistics; Paleontology; Structural Geology and Advanced Mapping; Global Geophysics and Tectonics; Spatial Analysis with GIS; Evolution of the Earth-

## RESEARCH EXPERIENCE

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**NASA Jet Propulsion Laboratory**, Pasadena, CA , September 2008 – Present

Geological mapping of the surface of Enceladus

Summary: Mapping and studying the surface of Saturn's moon Enceladus to explain the complex tectonics imaged on the surface and the south polar terrain water-ice plumes

Funded by NASA APX program and the Cassini Mission

**National Optical Astronomy Observatories (NOAO)**, La Serena, Chile, January –March 2008

Astrophysics research advised by Chris Miller

Summary: Compiling galaxy cluster and brightest cluster galaxy (BCG) data from the Sloan Digital Sky Survey (SDSS) to create a cluster catalog. Also, researching the impact of BCG surrounding cluster galaxies on BCG formation.

Funded by NSF Research Experience for Undergraduates (REU) grant

**NASA Jet Propulsion Laboratory**, Pasadena, CA , June - August 2007

Life Detection and Sample Handling Techniques Research Group (Advisor: Adrian Ponce)

Summary: Researching methods for the detection of anaerobic bacteria by use of Terbium-dipicolinic acid luminescence. For more information and publications, visit our research group website:

<http://ponce.caltech.edu/>

Funded by NASA Space Grant from Maine Space Grant Consortium

**Bates College Physics Department**, Lewiston, ME , January 2007-May 2007

Laser physics research advised by Professor Hong Lin

Summary: Analysis of optical feedback from Vertical-Cavity Surface-Emitting Laser (VCSEL). Optical feedback has often been a hindrance in optical communication techniques but with more knowledge of how feedback looks, it can eventually be used to communication coding benefits.

## **PRESENTATIONS and PAPERS**

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*Global Geological mapping of Enceladus (poster board)*; Lunar and Planetary Science Conference, March 2010

*Geological mapping of tectonized terrains on the trailing hemisphere of Enceladus (poster board)*; 2009 Joint Assembly and American Geological Union, Toronto, Canada, May 24-28, 2009.

*Dependence of Brightest Cluster Galaxy Properties on Local Environment (poster board)*; American Astronomical Society Conference, January 2009.

*Production and characterization of pure Clostridium spore suspensions (paper co-author)*; Journal of Applied Microbiology ISSN 1364-5072, June 2008.

*Life detection technologies and facts in the space field (interactive presentations to middle school students)*; Sponsored by Lockheed Martin and the Maine Space Grant Consortium. Maine Space Day, May 2, 2008

*Spore detection by use of  $tb^{3+}$ - dipicolinic acid luminescence (poster board)*; National Conference on Undergraduate Research (NCUR), April 10-12, 2008

*Dependence of Brightest Cluster Galaxy Properties on Local Environment (presentation)*; National Optical Astronomy Observatories, Cerro-Tololo Inter-American Observatory, National Science Foundation Research Experience for Undergraduates final presentations.

*Bacterial spore detection by use of  $tb^{3+}$ - dipicolinic acid luminescence (poster board)*; Southern California Conference on Undergraduate Research (SCCUR), November 17, 2007

*Bacterial spore detection by use of  $tb^{3+}$ - dipicolinic acid luminescence (presentation, paper)*; Sponsored by Maine Space Grant Consortium. NASA Jet Propulsion Laboratory, August 17, 2007

*Are we alone in the cosmos?: The search for life on other planets (paper)*; International Baccalaureate Extended Essay, May 2005-May 2006

## **HONORS**

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**Denver Public Schools Retired Employees' Association (DPSREA) Scholarship Foundation Merit Scholarship** awardee

**Occidental College Dean's Scholarship Merit Scholarship** awardee

## **OTHER RELEVANT EXPERIENCE**

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**Denver Museum of Nature and Science Volunteer**, Denver, CO, 2000-2006

**Planetarium production**, Bates College, Maine, 2007

**University of Denver Enrichment Classes**, Denver, CO, 2004

Ancient Astronomy

Cosmology

## **RELEVANT COMPUTER SKILLS**

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LINUX/UNIX systems

IDL

JAVA

SQL

GIS

Microsoft Excel

Microsoft Word

Microsoft Power Point

Adobe Illustrator

Adobe Photoshop