GWENDOLYN D. BART

RESEARCH PROFESSOR, UNIVERSITY OF IDAHO, DEPARTMENT OF PHYSICS

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Education

May 2007 — Ph.D., Planetary Science, University of Arizona (UofA), Tucson, AZ, USA

Dec 1998 — B.S., Chemistry, University of California, Santa Barbara (UCSB), USA

Research Experience

Assistant Research Professor, Department of Physics, University of Idaho (August 2008 — present)
Lunar surface structure and age from impact crater analysis.

Research Scientist, Carl Sagan Center, SETI Institute (March 2008 — Oct 2009)
Characterization of lunar south pole terrain for NASA LCROSS Mission. PI: Dr. Tony Colaprete

Research Scientist, Carl Sagan Center, SETI Institute (June 2007 — February 2008)
Physics of impact cratering and planetary implications.

Graduate Research Associate (August 2003 — May 2007)
Lunar surface geology from impact craters and their ejecta. Dr. H. Jay Melosh, advisor (UofA)

Graduate Research Assistant (January 2001 — July 2003)
Modeling Europa's tidal stress and cycloidal cracking. Dr. Richard Greenberg, advisor (UofA)

Graduate Research Assistant (January 2000 — December 2000)
Measurements of krypton and xenon in the nakhlites. Dr. Timothy Swindle, advisor (UofA)

Undergraduate Research Assistant (January 1998 — December 1998)
Photochemistry of Ru-salen compounds. Dr. Peter C. Ford, advisor (UCSB)

Publications

9. **Bart, G.D.**, R.D. Nickerson, M.T. Lawder, H.J. Melosh. (2011) Global Survey of Lunar Regolith Depths. *Icarus*, doi: 10.1016/j.icarus.2011.07.017.

8. **Bart, G.D.**, H.J. Melosh. (2010) Distributions of Boulders Ejected from Lunar Craters. *Icarus,* **209,** 337-357, doi: 10.1016/j.icarus.2010.05.023.

7. **Bart, G.D.**, H.J. Melosh. (2010) Impact Into Lunar Regolith Inhibits High Velocity Ejection of Large Blocks. *J. Geophysical Research.* **115**, E08004, doi: 10.1029/2009JE003441l.

6. Colaprete, A., P. Schultz, J. Heldmann, M Shirley, K Ennico, B Hermalyn, D Wooden, W Marshall, A Ricco, RC Elphic, D Goldstein, D Summy, **G.D. Bart**, E Asphaug, D Korycansky, D Landis, L Sollitt. (2010) The Detection of Water Within the LCROSS Ejecta Plume. *Science,* **330**, 463-468, doi: 10.1126/science.1186986.

5. **Bart, G.D.**, H.J. Melosh. (2007) Using Lunar Boulders to Distinguish Primary Rrom Distant Secondary Impact Craters. *Geophysical Research Letters,* **34,** L07203, doi: 10.1029/2007GL029306.

4. **Bart, G.D.** (2007) Comparison of Small Lunar Landslides and Martian Gullies. *Icarus* **187,** 417-421, doi: 10.1016/j.icarus.2006.11.004.

3. **Bart, G.D.**, E.P. Turtle, W.L. Jaeger, L.P. Keszthelyi, R. Greenberg. (2004) Ridges and Tidal Stress on Io. *Icarus,* **169,** 111-126, doi: 10.1016/j.icarus.2004.01.003.

2. Greenberg, R., G.V. Hoppa, **G.D. Bart,** T.A. Hurford. (2003) Tidal Stress Patterns on Europa's Crust. *Celestial Mechanics,* **87**, 171-188, doi: `10.1023/A:1026169424511`.

1. Works, C. F., C.J. Jocher, **G.D. Bart**, X. Bu, P.C. Ford. (2002) Photochemical Nitric Oxide Precursors: Synthesis, Photochemistry, and Ligand Substitution Kinetics of Ruthenium Salen Nitrosyl and Ruthenium Salophen Nitrosyl Complexes. *Inorganic Chemistry* **41**, 3728-3739, doi: `10.1021/ic020248k`.

Contributed Presentations

32. **Bart, G. D.**; Nickerson, R. D.; Lawder, M. T. (July 2011) Lunar Regolith Depth Correlates with Lunar Geologic Units. *4th Lunar Science Forum*, NASA Ames Research Center, CA.

31. **Bart, G. D.**; Nickerson, R. D.; Lawder, M. T. (March 2011) Geologic Unit Differences are Reflected by Lunar Regolith Depths. *42nd Lunar and Planetary Science Conference,* The Woodlands, TX, abstract #2597.

30. Nickerson, R. D.; **Bart, G. D.**; Lawder, M. T.; Melosh, H. J. (March 2011) Global Lunar Regolith Depths Revealed. *42nd Lunar and Planetary Science Conference,* The Woodlands, TX, abstract #2607.

29. Lawder, M.T., **G.D. Bart**, R.D. Nickerson. (December 2010) Measuring Regolith Depth across the Lunar Surface. *American Geophysical Union Fall Meeting,* San Fransisco, CA, abstract #P53A-1503.

28. **Bart, G.D.**; R.D. Nickerson, M.T. Lawder. (October 2010) Lunar Regolith Depths from LROC Images. *American Astronomical Society Division for Planetary Sciences meeting,* Pasadena, CA, abstract #21.11.

27. **Bart, G.D.** (July 2010) Global Survey of Lunar Regolith Depth. *3rd Lunar Science Forum*, NASA Ames Research Center, CA.

26. Colaprete, A., K. Ennico, D. Wooden, M. Shirley, J. Heldmann, W. Marshall, L. Sollitt, E. Asphaug, D. Korycansky, P. Schultz, B. Hermalyn, K. Galal, **G.D. Bart**, D. Goldstein, D. Summy. (March 2010) Water and More: An Overview of LCROSS Impact Results. *Lunar and Planetary Science Conference,* Houston, TX, abstract #2335.

25. Colaprete, A., G. Briggs, K. Ennico, D. Wooden, J. Heldmann, L. Sollitt, E. Asphaug, D. Korycansky, P. Schultz, A. Christensen, K. Galal, **G.D. Bart**, LCROSS Team. (November 2009) An Overview of the Lunar Crater Observation and Sensing Satellite (LCROSS) Mission Results from Swing-by and Impact. *Lunar Exploration Analysis Group meeting,* Houston, TX, abstract #2064.

24. **Bart, G.D.**, H. J. Melosh. (July 2009) High Velocity Ejection of Large Blocks Inhibited by Impact Into Lunar Regolith. *2nd Lunar Science Forum*, NASA Ames Research Center, CA.

23. **Bart, G.D.,** A. Colaprete. (June 2009) The Importance of LRO Observations to the LCROSS Mission. *Lunar Reconnaissance Orbiter Science Targeting Meeting*, Tempe, AZ.

22. **Bart, G.D.**, Colaprete, A. (May 2009) NASA's LCROSS Mission and the Search for Water Ice on the Moon. *Annual Meeting of the Northwest Section of the American Physical Society,* Vancouver, BC, Canada, abstract #BAPS.2009.NWS.B1.13.

21. **Bart, G.D.**, A. Colaprete. (March 2009) Shadow Depths and Other Characteristics of Potential LCROSS Impact Sites. *Lunar and Planetary Science Conference,* Houston, TX, abstract #2151.

20. Colaprete, A., G. Briggs, K. Ennico, D. Wooden, J. Heldmann, L. Sollitt, E. Asphaug, D. Korycansky, P. Schultz, A. Christensen, K. Galal, **G.D. Bart**, LCROSS Team. (March 2009) An Overview of the Lunar Crater Observation and Sensing Satellite (LCROSS) Mission – An ESMD Mission to Investigate Lunar Polar Hydrogen. *Lunar and Planetary Science Conference,* Houston, TX, abstract #1861.

19. **Bart, G.D.**, A. Colaprete. (November 2008) LCROSS: Implications for a Lunar Cataclysm. *Workshop on the Early Solar System Impact Bombardment,* Houston, TX.

18. **Bart, G.D.**, A. Colaprete. (October 2008) Characterizing the LCROSS Impact Site. *Lunar Exploration Analysis Group meeting,* Cape Canaveral, FL.

17. **Bart, G.D.**, A. Colaprete. (September 2008) Selection and Characterization of the LCROSS Impact Site. *American Astronomical Society Division for Planetary Sciences meeting,* Ithaca, NY, abstract #32.15.

16. **Bart, G.D.**, A. Colaprete. (July 2008) LCROSS Impact Site Characterization. *1st Lunar Science Forum,* NASA Ames Research Center, CA, abstract #2037.

15. **Bart, G.D.**, A. Colaprete. (March 2008) LCROSS Impact Site Characterization. *39th Lunar and Planetary Science Conference,* Houston, TX, abstract #2225.

14. **Bart, G.D.**, H.J. Melosh (March 2008) Identifying Martian Secondary Craters by Their Ejected Boulders. *39th Lunar and Planetary Science Conference*, Houston, TX, abstract #1461.

13. **Bart, G.D.**, H. J. Melosh. (December 2007) Maximum Velocity of a Boulder Ejected From an Impact Crater Formed on a Regolith Covered Surface. *American Geophysical Union Fall Meeting,* San Fransisco, CA, abstract #U22A-07.

12. **Bart, G.D.**, H. J. Melosh. (March 2007) Boulders Untangle Primary from Secondary Craters. *Lunar and Planetary Science Conference,* Houston, TX, abstract #1501.

11. **Bart, G.D.**, H.J. Melosh. (September 2006) Boulders Ejected From Small Impact Craters. *American Astronomical Society Division for Planetary Sciences meeting,* Pasadena, CA, abstract #49.02.

10. **Bart, G.D.** (March 2006) Comparison of Martian Gullies and Lunar Crater-Wall Landslides. *Lunar and Planetary Science Conference,* Houston, TX, abstract #1345.

9. **Bart, G.D.**, H. J. Melosh. (August 2005) Lunar Far Side Regolith Depth. *American Astronomical Society Division for Planetary Sciences meeting*, Cambridge, England, abstract #57.07.

8. **Bart, G. D.**, H. J. Melosh. (March 2005) Ejected Boulders: Implications for Secondary Craters and the Age Dating of Surfaces. *Lunar and Planetary Science Conference*, Houston, TX, abstract #2022.

7. **Bart, G.D.**, H.J. Melosh, R.G. Strom. (November 2004) Characterization of Boulders Ejected from Small Impact Craters. *American Astronomical Society Division for Planetary Sciences meeting*, Louisville, KY, abstract #39.04.

6. **Bart, G.D.,** H. J. Melosh. (March 2004) Low Velocity Ejection of Boulders from Small Lunar Craters: Ground Truth for Asteroid Surfaces. *Lunar and Planetary Science Conference*, Houston, TX, abstract #1906.

5. **Bart, G.D.**, E.P. Turtle, W.L. Jaeger, L.P. Keszthelyi, R. Greenberg. (September 2003). Possible Surface Effects of Tidal Stress on Io. *American Astronomical Society Division for Planetary Sciences meeting,* Monterey, CA, abstract #02.04.

4. **Bart, G.D.**, R. Greenberg, G.V. Hoppa. (March 2003). Cycloids and Wedges: Global Patterns from Tidal Stress on Europa. *Lunar and Planetary Science Conference,* Houston, TX, abstract #1396.

3. **Bart, G.D.**, R. Greenberg, G.V. Hoppa, T.A. Hurford. (September 2002) Global patterns of diurnal tensile cracking on Europa. *American Astronomical Society Division for Planetary Sciences meeting,* Birmingham, AL, abstract #41.02.

2. Swindle, T. D.; Olson, E. K.; **Bart, G.** (September 2001) Searching for Evidence of Extinct 36-Chlorine in Efremovka. *64th Meteoritical Society Meeting*, Rome, Italy, abstract #5084.

1. **Bart, G. D.,** T.D. Swindle, E.K. Olson, A.H. Treiman. (March 2001) Xenon and Krypton in Nakhla Mineral Separates. *Lunar and Planetary Science Conference*, Houston, TX, abstract #1363.

Invited Talks

8. "Global Survey of Lunar Regolith Depths." University of Idaho, Department of Physics, colloquium. November 1, 2010, in Moscow, ID.

7. "Global Survey of Lunar Regolith Depths." Washington State University, Department of Physics, colloquium. October 19, 2010, in Pullman, WA.

6. University of Idaho, Department of Physics, undergraduate seminar (Phys 200). Oct 13, 2010, in Moscow, ID.

5. "Water on the Moon." University of Idaho, Department of Physics, colloquium. April 19, 2010, in Moscow, ID.

4. University of Idaho, Department of Physics, undergraduate seminar (Phys 200). Sept 16, 2009, in Moscow, ID.

3. "Impact Cratering on the Moon and Mars." University of Idaho, Department of Physics, collqiuum. February 9, 2009, in Moscow, ID.

2. "An Overview of the Lunar Crater Observation and Sensing Satellite (LCROSS) Mission - An ESMD Mission to Investigate Lunar Polar Hydrogen." Joint Annual Meeting of LEAG-ICEUM-SRR, held October 28-31, 2008 in Cape Canaveral, Florida.

1. "Impact Cratering on the Moon and Mars." University of Idaho, Department of Geological Sciences, colloquium. September 25, 2008, in Moscow, ID.

Grant Support

4. **Source:** Mars Data Analysis Program (MDAP), NASA
   Title: Martian Surface Structure and Age from Impact Crater Analysis
   PI: G. D. Bart (UIdaho)
   Co-I: none
   Collaborators: Alfred McEwen, Ingrid Daubar-Spitale
   Award Amount: $160,117 total over 2 years ($160,117 to Bart)
   Period Covered by Award: Aug 2011–July 2013
   Type: external, competed, PI
   Status: current

3. **Source:** Lunar Advanced Science and Exploration Research (LASER), NASA
   Title: Lunar Surface Structure and Age from Impact Crater Analysis
   PI: G. D. Bart (UIdaho)
   Co-I: none
   Collaborator: Jay Melosh
   Award Amount:
   Period Covered by Award: Oct 2008–Sept 2012
   Type: external, competed, PI
   Status: current

2. **Source:** Lunar Advanced Science and Exploration Research (LASER), NASA
   Title: Formation of Gully-like Dry Lunar Debris Flows From Their Morphology and Distribution
   PI: G. D. Bart (UIdaho)
   Co-I: none
   Collaborator: none
   Award Amount: $ 256,722.25 total over 3 years ($ 256,722.25 to Bart)
   Period Covered by Award: 2011 Aug 23 — 2014 Aug 22
   Type: external, competed, PI
   Status: pending

1. **Source:** Lunar Advanced Science and Exploration Research (LASER), NASA
   Title: Implications of Lunar Regolith Depth for Lunar Surface Chronology
   PI: G. D. Bart (UIdaho)
   Co-I: none
   Collaborator: none
   Award Amount: $ 257,471.47 total over 3 years ($ 257,471.47 to Bart)
   Period Covered by Award: 2011 Aug 23 — 2014 Aug 22
   Type: external, competed, PI
   Status: pending

Students Mentored

2011 Summer: Andrew Johnson, UIdaho Physics REU student.

2010 Summer - 2011 Fall: Ryan Nickerson, UIdaho physics undergraduate. Supported via my grant money.

2010 Summer: Matthew Lawder, undergraduate. UIdaho Physics REU student.

2009 Summer: Raechel Bianchetti, UIdaho geography graduate student. McNair Summer Research Fellow.

2009 Summer: Eric Petersen, undergraduate. UIdaho Physics REU student.

Member of Graham Vixie's committee (graduate student, physics).

Member of Jonathan Kay's committee (master's student, geology, 2010).

Teaching Experience

2010 Fall: One lecture, "Star Clusters", for Jason's Barnes's general astronomy for non-majors class (PHYS 103.)

2010 Spring: One lecture, "The Physics of Impact Cratering," for Jason Barnes's astrophysics class (PHYS 484/584).

2009 Spring: Three lectures on introductory physics in Jason Barnes's freshman-level calculus-based mechanics class (PHYS 211.)

2008 Fall: One lecture, "The Physics of Impact Cratering," for Jason Barnes's astrophysics class (PHYS 484/584).

2008 Fall: One lecture, "Impact cratering on the Moon and Mars," for Ken Sprenke's CORS 217 class.

2005 Fall: **Adjunct Faculty** at Pima Community College, Northwest Campus, in Tucson, AZ. Taught Chem 130IN, Introduction to Chemistry.

1999 Fall - 2005 Spring (11 semesters): **Teaching Assistant** at Univ. of Arizona. Taught NATS 101, 102, PTYS 206, Introduction to Planetary Science

Service to Scientific Community

2011: Served on Scientific Organizing Committee, *4th Lunar Science Forum*, NASA Ames Research Center, CA.

2009, 2010, 2011: Served as judge for Lunar and Planetary Science Conference Dwornik Student Presentation Awards.

2010: Served as session chair for Geology session, *3rd Lunar Science Forum*. July 2010 at Moffett Field, CA.

2010: Selected the lunar impact location for the LCROSS spacecraft, in conjunction with the LCROSS team.

2009: Served on the NASA Lunar Advanced Science and Exploration Research program (LASER) grant review panel.

2008: Served on grant review panel for the NASA Lunar Science Institute.

2007: Served on NASA Mars Data Analysis Program (MDAP) grant review panel.

Editorial Service

Served as scientific reviewer for the following journals/editors:

Icarus, Oded Aharonson, editor. (2011 July) .
Journal of Geophysical Research Planets , Sarah Stewart, editor. (2011 January)
Planetary and Space Science, R. Schultz, editor. (2010)
Geophysical Research Letters, Fabio Florindo, editor. (2009)
Planetary and Space Science, R. Schulz, editor. (2008)
Icarus, Jim Bell, editor. (2008)

Service to University and Department

2009-2011: Organized "Astronomy and Planetary Science, Idaho Sector" (APSIS) journal club meetings.

2009-2011: Served as a student mentor for the Univ. of Idaho, Dept. of Physics REU program.

2010: Served as a judge for the UIdaho College of Science Student Research Exposition.

2010: Presentation to the Palouse Astronomical Society about NASA's LCROSS mission.

2009: Served as a mentor for a student in the Univ. of Idaho McNair Summer Research program.

Professional Memberships

AGU — American Geophysical Union (http://www.agu.org/)

APS — American Physical Society (http://aps.org)

DPS — Division of Planetary Science of the American Astronomical Society (http://dps.aas.org/)

GSA — Geological Society of America (http://www.geosociety.org/)

Miscellaneous

2005: Participated in JPL's TeamX Planetary Science Summer School.

2004-2005: Served one year as the graduate student representative to the Planetary Science faculty.

2002-2004: Served two years on Organizing Committee for the Lunar and Planetary Laboratory Conference, a two day scientific conference with a budget of $6,000.00.

2002,05,06: University of Arizona graduate registration fellowship

1999-2007: Participated in 13 geology field trips to various locations in Arizona, Mexico, New Mexico, California, Washington state, west Texas, and Utah.

1998: Graduated with Highest Honors (top 2.5%) at UCSB

1998: Hughes Medical Institute Fellowship for summer research at UCSB

1998: McRary Prize, Phi Lambda Upsilon, UCSB

August 18, 2011