

BRIONY H. N. HORGAN

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Department of Astronomy
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EDUCATION

- **Ph.D., Cornell University, Astronomy, expected 2010.**
Advisor: Prof. Jim Bell
Thesis: Wind and water in the north polar region of Mars: Composition and morphology of north polar deposits
- **M.S., Cornell University, Astronomy, 2008.**
- **B.S., Oregon State University, Physics, *summa cum laude*, 2005.**

RESEARCH INTERESTS

- Surface composition and geology of terrestrial planets and small bodies
- Reflectance and emittance spectroscopy, laboratory and spacecraft
- Aqueous alteration and soil formation on Mars
- Aeolian transport and induration processes, dune dynamics and morphology
- Terrestrial analog studies, field and laboratory

PRACTICAL SKILLS

- Data reduction/mapping/analysis of planetary surface spectra, including visible, NIR, and TIR
- Image processing and photogeology
- Software: IDL, ArcGIS, ENVI, JMars, Photoshop

GRANTS OBTAINED

- **Minerals, Ice, and Dunes: Signs of Water-Related Processes in the Martian North Polar Basin**
NASA Harriet G. Jenkins Pre-doctoral Fellowship (2008-present)
- **Student Co-I: Mineralogic and Morphologic Studies of Mars and Implications of Observed Water-Rock Alteration**
PI: Jim Bell, Mars Data Analysis Program (2008-2011)
- **Transient Water in the North Polar Region of Mars: A Compositional and Mars Analog Study**
Cornell Graduate School Research Travel Grant (2008)

AWARDS AND HONORS

- Eleanor Norton York Prize in Astronomy (2009)
- LPI Career Development Award (2009)
- **Harriet G. Jenkins Predoctoral Fellowship (2008-present)**
- Physics Undergraduate Scholar Award (2005)
- Zonta Service Foundation Scholarship (2003)
- Excellence in Science Scholarship (2002)
- Krane Scholarship in Physics (2002)
- OSU Achievement Scholarship (2001)

PROFESSIONAL AFFILIATIONS

- American Astronomical Society (Division for Planetary Sciences)
- American Geophysical Union (Planetary Sciences Section)
- Geological Society of America (Planetary Geology Division)
- The Planetary Society

SERVICE AND OUTREACH

- Cornell Graduate and Professional Student Assembly
Co-founder, Student Advocacy Committee, 2008
Assembly Member for the Physical Sciences, 2007-2009
Council of Representatives Member for the Department of Astronomy, 2006
- Expanding Your Horizons Youth Conference, Initial Contacts Chair, 2007-2009
- 4-H Focus For Teens program, Workshop Leader, 2008-2009
- John Hopkins Talented Youth program, Workshop Leader, 2008
- *Icarus* Scientific Referee, 2008-present
- 40th Annual AAS Division of Planetary Science Meeting
Local Organizing Committee Member, Session Chair, 2008
- Cornell Graduate Women in Physics, Vice President, 2007
- Cornell Department of Astronomy EPO program, Volunteer, 2006-2008
- Cornell Department of Astronomy Planetary Lunch Seminar, Chair, 2006-2008
- Cornell Astronomy Graduate Network
President, 2007
Founding Officer and Vice President, 2006
- OSU Society of Physics Students, President, 2003

TEACHING EXPERIENCE

- Graduate TA, Astronomy 310, "Planetary Image Processing", Cornell, 2005
- Graduate TA, Astronomy 102, "Our Solar System", Cornell, 2006
- Undergraduate TA, Physics 427, "Paradigm: Periodic Systems", OSU, 2005
- Undergraduate TA, Physics 423, "Paradigm: Energy & Entropy", OSU, 2005
- Undergraduate TA, Physics 211, "General Physics w/ Calculus", OSU, 2004
- Undergraduate TA, Physics 201, "General Physics", OSU, 2004
- Physics Department Sponsored Tutor, OSU Learning Center, 2003-2005
- Private Tutor for Physics and Math Courses, All Levels, OSU, 2003-2005

INVITED TALKS

- Using Composition to Unravel the Geologic History of the North Polar Region of Mars. *MIT Women in Aerospace Symposium*, Cambridge, MA (2009)

PUBLICATIONS

- Horgan, B.** and J. Bell. Acid alteration of glass-bearing materials: Formation of a major martian surface type. In prep for *Science*.
- Horgan, B.**, J. Bell, E. Noe Dobrea, E. Cloutis, D. Bailey, M. Craig, L. Roach, J. Mustard. Distribution of Hydrated Minerals in the North Polar Region of Mars. *Journal of Geophysics Research*, 114, doi:10.1029/2008JE003187, 2009.
- Kangas, M., M. Ansmann, K. Copsey, **B. Horgan**, R. Leonardi, P. Lubin, T. Villela. A 100-GHz High-gain Tilted Corrugated Nonbonded Platelet Antenna. *IEEE: Antennas and Wireless Propagation Letters*, 4, 304 – 307, 2005.
- Kangas, M., M. Ansmann, **B. Horgan**, N. Lemaster, R. Leonardi, A. Levy, P. Lubin, J. Marvil, P. McCreary, T. Villela. A 31 Pixel Flared 100-GHz High-gain Scalar Corrugated Nonbonded Platelet Antenna Array. *IEEE: Antennas and Wireless Propagation Letters*, 4, 245 – 248, 2005.

CONFERENCE PROCEEDINGS

- Horgan, B.**, J. Bell. Acid alteration of glass-bearing materials: Formation of a major martian surface type. *GSA 2009*, #97-5, 2009.
- Horgan, B.**, J. Bell. Acid alteration of basaltic sand: Formation of a major martian surface type. *New Martian Chem.*, #8023, 2009.
- Horgan, B.**, J. Bell, M. Bourke. Induration and activity in the north polar region of Mars. *7th Intl. Conf. on Geomorphology*, #997, 2009.
- Horgan, B.**, J. Bell. Insights from ferrous mineralogy into the transport of martian north polar materials. *LPSC XL*, #2457, 2009.
- Horgan, B.**, J. Bell, E. Noe Dobrea. Aeolian transport of ferrous minerals in the north polar region of Mars. *DPS 40*, #3.02, 2008.
- Horgan, B.**, J. Bell, P. Thomas, E. Noe Dobrea. Hydrated minerals in the north polar chasmata and circum-polar erg. *Planetary Dunes Workshop*, #1403, 2008.
- Horgan, B.**, J. Bell, E. Noe Dobrea, E. Cloutis, D. Bailey, M. Craig, L. Stewart. Hydrated units in the martian north polar region. *LPSC XXXIX*, #2122, 2008.
- Horgan, B.**, J. Bell, E. Noe Dobrea, P. Thomas. Remote sensing observations and implications of martian north polar sulfate deposits. *Mars 7*, #3241, 2007.
- Horgan, B.**, J. Bell, E. Noe Dobrea. A remote sensing survey of martian north polar deposits between 75N and 85N. *DPS 38*, #61.0, 2006.