

# **CURRICULUM VITAE (2017)**

## **1. PETER H. SCHULTZ**

Professor Research, Professor Emeritus  
Department of Earth, Environmental, and Planetary Sciences

## **2. HOME ADDRESS:**

P.O. Box 831  
East Greenwich, RI 02818

## **3. EDUCATION:**

B.A. Carleton College, 1966, Honors in Major  
Ph.D. in Astronomy, University of Texas at Austin, 1972  
Dissertation: "A Preliminary Morphologic Study of the Moon"

## **4. PROFESSIONAL APPOINTMENTS**

1966-1967	Summer Employee: U.S. Naval Observatory, Washington, D.C.
1970-1973	Research Scientist, Department of Geological Sciences, University of Texas, Austin, Texas
1973-1975	Research Associate: National Academy of Sciences-National Research Council, NASA Ames Research Center (Moffett Field, California)
1975-1976	Research Associate: NASA Ames Research Center (through University of Santa Clara, Santa Clara, California)
1976-1981	Staff Scientist: The Lunar and Planetary Institute (Houston, Texas)
1981-1984	Senior Staff Scientist: The Lunar and Planetary Institute (Houston, Texas)
1984-1996	Visiting Scientist: The Lunar and Planetary Institute (Houston, Texas)
1984-1994	Associate Professor: Department of Geological Sciences, Brown University (Providence, Rhode Island)
1994-2014	Professor: Department of Geological Sciences, Brown University, Providence, Rhode Island

2014-present Professor Emeritus and Professor Research: Department of Earth,  
Environmental, and Planetary Science, Brown University (Providence, Rhode  
Island)

## **5. COMPLETED RESEARCH**

### **a. *PUBLISHED BOOKS, PAPERS AND ABSTRACTS* (see end)**

### **b. *INVITED LECTURES (1985-2013)***

*1985:*

Conference on the Evolution of the Martian Atmosphere (Hawaii)

Workshop on Apollo 15 (keynote speaker)

Workshop on Space Station Planetology Experiments

Planetary Geology Speakers Bureau (Nassau Community College; Middlebury  
College)

Lunar and Planetary Science Conference XVII: Panel on Martian Volatiles  
Volcanological Society of Japan (Tokyo)

*1986:*

Sixth Hypervelocity Impact Symposium (San Antonio, Texas)

Mercury Conference (keynote speaker)

NASA Goddard Lecture Series

*1987:*

Boston University (Colloquium)

Brown-Vernadsky Microsymposium (Moscow)

University of New Hampshire (Colloquium)

M.I.T. Planetary Society Space University

American Geophysical Union Spring Meeting (Invited Speaker, San Francisco)

AAS Division of Planetary Sciences (Keynote Speaker, Tucson)

Workshop on Mars Sample Return (Keynote speaker, Houston)

*1988:*

American Geophysical Union Spring Meeting (Invited for three separate talks,  
Baltimore)

*1990:*

AIAA Student Lecture Series (NASA Goddard)

American Geophysical Union Fall Meeting (Invited Speaker, San Francisco)

*1992:*

National Academy of Sciences, Cordoba, Argentina (February)

University of Washington, Seattle (April)

American Geophysical Union Spring Meeting (Invited Speaker, Montreal)  
URI Graduate School of Oceanography (September, Colloquium)  
Hypervelocity Impact Symposium Keynote Speaker (Austin, TX)  
Lunar and Planetary Science Conference, Space Science Education, Subliminal Side of  
Science (Invited Speaker, Houston)

*1993:*

Arizona State University (February, Colloquium and Seminar)  
Los Alamos National Laboratories (March, Colloquium)  
Cornell University (April, Colloquium)

*1994:*

American Geophysical Union Fall Meeting (Invited Speaker, San Francisco)  
New York Academy of Sciences (January, Invited Speaker, New York)  
University of Massachusetts (February, Colloquium, Amherst)  
Dartmouth College (March, Colloquium and Seminar)  
Rensselaer Polytechnic Institute (April, Colloquium, Troy, NY)  
American Geophysical Union Spring Meeting (Invited for two separate talks, Baltimore)

*1995:*

University of Iowa and Iowa Department of Natural Resources (Iowa City)  
American Association for the Advancement of Science (Atlanta)  
University of Pittsburgh  
International Conference on Advanced Materials (Cancun)  
American Petrofina (Houston)

*1996:*

University of Rhode Island, Graduate School of Oceanography (Narragansett, RI)  
American Association of Petroleum Geologists National Meeting (San Diego)  
Brown University, Departmental Colloquium  
Carleton College Alumni Weekend Guest Speaker

*1997:*

Rutgers University (New Brunswick, New Jersey)  
University of Delaware (Newark, Delaware)  
University of New Brunswick (Fredericton, New Brunswick)  
Commencement Forum Participant (Brown University)

*1998:*

VII Congress on Argentine Paleontology and Biostratigraphy, 10/9/98 (Bahia Blanca),  
Invited Speaker  
Colloquium, Brown University  
Colloquium, Rhode Island College (Space Grant)  
Colloquium, Lamont-Doherty Geophysical Laboratory (NY)  
Astrobiology Institute Review Panel

1999

Colloquium, John Hopkins Applied Physics Laboratory (Baltimore, MD)  
Colloquium, SUNY Stony Brook (NY)  
Seminar, Museo Mar del Plata, Argentina  
National Space Grant Director's Meeting (Hawaii)  
Keynote Speaker, Aeroballistic Ranges Conference (Livermore, CA)  
Visiting Lecture, Wheaton College  
Visiting Lecture, URI Geology

2000

Colloquium, Smithsonian (Washington, D.C.)  
Colloquium, Department of Geological Sciences (Brown)  
Seminar, YPF Petroleum Company (Buenos Aires)

2001

Colloquium, La Pampa University (Santa Rosa University)

2003

Invited Keynote, Impact Cratering Workshop (Houston, TX)  
Colloquium, Northwestern University (Evanston, IL)  
Colloquium, Brown University  
Invited Keynote, Argentine Paleontological Association Congress (La Pampa, Argentina)  
Invited Colloquium, Woods Hole Oceanographic Institution (MA)

2004

Invited Barringer Lecture, Meteoritical Society (Rio de Janeiro, Brazil)  
Invited Plenary for SPARK Summer program (Brown University)

2005

ICSU Dark Nature, IGCP 490 (Mar Chiquita, Argentina, March): *Invited Keynote, Third Joint Meeting, Holocene environmental catastrophes in South America: from the lowlands to the Andes*, sponsored by the International Geological Correlation Programme (IGCP), a joint initiative of UNESCO (United Nations Educational, Scientific and Cultural Organization) and IUGS (International Union of Geological Sciences).

Bryant University (April): Special University-wide Colloquium  
Oberlin College (April): Colloquium and Seminar  
Invited Speaker (May): Brown University Commencement Forum  
Shock Effects on Condensed Matter (Baltimore, July): *Invited Keynote Address*  
Atmospheric Effects on Impact Ejecta Emplacement (Baltimore, July): *Invited review*  
“Asteroid, Comets, and Meteorites” Conference (August): *Invited talk*, Buzios, Brazil (August)  
Northeast Regional Space Grant Directors Meeting (August): *Invited Keynote* (August), New Hampshire  
Division of Planetary Science (September): First results from the Deep Impact Mission, *Invited*, Cambridge, England

Division of Planetary Science (September): "Shooting the Moon: A Personal History of Lunar Impact Theories," *Invited*, Historical Division of the DPS, Cambridge, England

Brown University, Department of Geological Sciences (September): Colloquium

National Space Grant Director's Meeting (October): *Invited Keynote* (NASA Kennedy Space Center)

Hypervelocity Impact Symposium (Lake Tahoe, October): *Invited Keynote* Address

American Geophysical Union Fall Conference (December): Whipple Lecture (*Invited*)

## **2006**

Invited Keynote: 23rd annual Alexander Graham Christie Lecturer, Johns Hopkins University (March 16, 2006)

Invited Keynote: Wisconsin Space Grant Statewide Consortium Meeting (August 10, 2006)

## **2007**

Colloquium: "The Deep Impact Oblique Impact Experiment" *University of Colorado, Astrophysical and Planetary Sciences, Boulder, CO* (January 2007)

Colloquium: "The Moon: Dead or Alive" *Southwest Research Institute, Boulder, CO* (January, 2007)

Colloquium: "The Deep Impact Oblique Impact Experiment" *MIT Plasma and Fusion Center*

Colloquium: "Kinetic Prospecting: Results from Deep Impact and Upcoming Strategies" Brown University (September, 2007)

Invited Workshop Presentation: "Hypervelocity Impact Flash Experiments" *NASA Marshall, Huntsville, AL* (Feb., 2007)

Keynote (Invited): "The Deep Impact Oblique Impact Experiment" *American Physical Society* (Shock and Condensed Matter), Kona, Hawaii

Keynote (Invited): "Probing Planetary Surfaces with Hypervelocity Impacts," *Hypervelocity Impact Symposium, Williamsburg, VA*

Keynote (Invited): "Digging a Comet" Results from the Deep Impact Mission" *Artist Lecture Series Symposium* (Hastings College, NE)

Keynote (Invited): "Kinetic Prospecting of planetary Surfaces" Dynamic Compression of Condensed Matter, *The Royal Society, London, December 6, 2007.*

Invited Presentation: LCROSS Impact and Coordination of LRO Observations, Lunar Reconnaissance Orbiter Project Review, NASA Goddard Space Flight Center Nov. 29, 2007.

## **2008**

Invited Colloquium: "Making the Man in the Moon: What the South-Pole-Aitken Basin did to the Lunar Nearsides," *Lunar and Planetary Institute 40<sup>th</sup> Anniversary Seminar Series, Houston, TX* (February, 2008)

Invited Seminar: "A likely but improbable event: The unique consequences of oblique impacts in Earth history," Massachusetts of Technology, Cambridge (January, 2008)

Invited Colloquium: “Chicken Little or Armageddon: Past and Future Threats,”  
University of Connecticut, Storrs, CT (April, 2008)  
Invited Presentation: “The Moon: Dead or Alive,” *American Association of Petroleum Geologists*, San Antonio (April, 2008)

## **2009**

Invited Speaker: *Kinetic Prospecting of Planetary Surfaces* (NASA-Ames/ Hawaii-University Cooperative Agreement, February, 2009)  
Invited Speaker: National Space Grant Meeting, *LCROSS: Shooting the Moon*, Portland, OR (October, 2009)  
Invited talk: *LCROSS: Shooting the Moon*, Regional Planetary Image Facilities meeting, Washington DC (December, 2009)  
Invited Speaker: Lunar Exploration Analysis Group Meeting, *Shooting the Moon: First Results from LCROSS* (November, 2009)  
Colloquium Speaker (and seminar): SUNY Buffalo, *The Day the Sky Fell on Peru* (October, 2009)  
Invited Speaker: American Geophysical Union, *Lost Impacts* (December)  
Keynote Speaker: *LCROSS Results*, Regional Planetary Image Facilities meeting (Washington, DC)

## **2010**

Colloquium Speaker: Department of Geology, *University of Toronto* “Why the Two-Faced Moon?” (Jan. 29, 2010)  
Invited talk: *Lunar Exploration Analysis Group (LEAG)* Meeting: “Shooting the Moon: A Review of the LCROSS Results” (Washington, DC).  
Colloquium Speaker: *Ohio University* (January 28): “Chicken Little or Armageddon: The threat from Cosmic Debris”  
Colloquium Speaker: Brown University, “Beneath the Shadows of the Moon” (February).  
Invited Speaker: *11<sup>th</sup> International Hypervelocity Impact Society* (Freiburg Germany, April).  
Invited Acceptance Award Talk: at the *11<sup>th</sup> International Hypervelocity Impact Society*, Freiburg Germany.  
Keynote Speaker: *25<sup>th</sup> Anniversary of the DLR Regional Planetary Image Facility* (Berlin, Oct., 2010). This invited talk was coupled to the opening of 3D Mars at DLR (Germany’s equivalent to NASA’s JPL).

## **2011**

Invited talk: *Possible Sources of Polar Volatiles (invited)* American Geophysical Union, Fall Meeting (San Francisco)

## **2012**

Invited talk: *Origin of the Imbrium Sculpture*, G. K. Gilbert Award Session at the *Geological Society of America* (November, Charlotte, NC).  
Invited talk: *Making the Man in the Moon*, College of Charleston (March, Charleston, SC)

## 2013

Colloquium: “*Kinetic Planetary Probes: New Approaches and Challenges*” (Department of Chemical Engineering, URI)

Invited talk: “*Shooting the Moon: Strategies and results of excavating buried hidden volatiles on the Moon from NASA's LCROSS mission.*” PETER (Pressure, Energy, Temperature and Extreme Rates) Conference, Institute of Shock Physics, Imperial College, London (February, 2013, London)

Invited talk: “*Making the Man in the Moon: Origin of the Lunar Dichotomy by a Major Lunar Impact*” and “*Shooting the Moon: Results from the LCROSS Mission*” University of New Brunswick (May, Fredericton, NB)

## 2014

Invited talk: “*Using kinetic probes for exploration and defense: lessons from the Deep Impact and LCROSS missions,*” 2014 International AIDA Workshop (October), Applied Physics Laboratory, Laurel, MD

Colloquium: “*Impact Amber: Preserving Flora and Organics inside Impact Melt Breccias*” Bryant University (October)

Invited talk: “*Impact of Impacts*” Petrobras, Houston (April)

## 2015

Invited Colloquium: “*Making the Man in the Moon*” (Brown, March)

Invited talks: Co-organized Workshop on Impact Cratering (June, San Juan, Argentina) and presented seven 90 minute invited lectures:

“*General Overview & History of Impacts on Earth*”

“*Cratering Record on Earth*”

“*Crater Formation Processes*”

“*Flux Rate on Earth & Planets: Impact Risks*”

“*Argentine Impact Record*”

“*Impact Extinctions: Causes and Effects*”

“*Impact Cratering and Economic Resources*”

Invited talk: “*Scaling laboratory experiments to natural planetary experiments*” Bridging the Gap III meeting (September, Freiburg, Germany)

## 2016

Invited Colloquium: “*Making the Man in the Moon*” Rutgers University

Invited Colloquium: Virgil E. and Mildred L. Barnes Distinguished Lecture Series in Geology: “*Making the Man in the Moon*” DeFord Lecture Series, Jackson School of Geosciences, University of Texas

Invited Seminar: *Impact Extinctions*, Paleontology/Paleobiology, Jackson School of Geosciences, University of Texas

Invited Talk: *Chicken Little Was Right*, Carleton College

2017

Invited Seminar: *The Moon* (October, San Juan, Argentina) presenting eight 90 minute invited lectures

## 6. RESEARCH IN PROGRESS (2017)

- a) Documenting temperature and compositional evolution through hypervelocity impact experiments performed at *NASA Ames Research Center*, spectra, and computational codes.
- b) Investigating impact record in Argentina as a means to understand the chrono-stratigraphy of sedimentary sequences over the last 10 million years.
- c) Performing research on the effect of impact trajectory (direction and angle) on crater structure and other observational metrics, which have important implications for the regional ecological stress created by terrestrial impacts.
- d) Using the *NASA Ames Vertical Gun Range* to understand new scaling relations for different conditions of impact and energy partitioning.
- e) Performing hypervelocity laboratory impact and high strain-rate experiments to understand the relative roles of shock and shear heating during impact.
- f) Assessing the effect of an atmosphere on the emplacement of crater ejecta as a means to probe the Martian crust.
- g) Investigating the generation, dispersal, survival and evidence for impact glass deposits on Mars.
- i) Assessing the effect of impact angle on asymmetries in peak pressures and ejecta distribution using the *NASA Ames Vertical Gun Range*
- i) Quantifying ejecta flow fields using three-dimensional particle velocimetry (with *NASA Ames Research Center*) and expressions of this flow-field on planetary surfaces.
- j) Investigating processes affecting the synthesis and survival of organics during hypervelocity impacts.
- k) Investigating the consequences of large-body impacts on small bodies.
- l) Continuing investigations on the erosion of craters as expressions of lithology.
- m) Assessing strategies for asteroid deflection.
- n) Understanding the formation of lunar swirls
- o) Assessing impact-generated winds on Mars

## 7. SERVICE (1984-2017)

### a. *TO THE DEPARTMENT AND THE UNIVERSITY*

- |           |  |
|-----------|--|
| 1984-1985 | Under the Elms, Speaker<br>Corporation Spouses, Speaker  |
| 1985-1986 | Brown University Club of Boston, Guest Speaker<br>Sophomore Class "Concentration Day" panelist |



1986-1987	Academic Code Committee
	Fulbright Undergraduate Award Committee
	Departmental Advisory Committee
	Educational Policy Committee
	Independent Studies Subcommittee
1987-1988	Academic Code Committee
	Fulbright Undergraduate Award Committee
	Freshman Orientation Week Participant
	Departmental Advisory Committee
	Departmental Peer Review Committee
1988-1989	Independent Studies Subcommittee
	Academic Code Committee
	Fulbright Undergraduate Award Committee
	Freshman Orientation Week Participant
	Departmental Peer Review Committee
1989-1990	Academic Code Committee
	Fulbright Undergraduate Award Committee
	Independent Studies Subcommittee
	Departmental Computer Committee
	Academic Code Committee
1990-1991	Fulbright Undergraduate Award Committee
	Curriculum Advisor Program Advisor
	Departmental Computer Committee
	Departmental Building Committee
	Parents Weekend Lecture
1991-1992	Academic Code Committee
	Fulbright Undergraduate Award Committee
	Curriculum Advisor Program (CAP) Advisor
	Departmental Curriculum Committee
	Departmental Computer Committee
<b>1991-1992</b>	<b>Sabbatical</b> ( <i>But volunteered for Brown Alumnae Talk, Seattle Chapter, and Under the Elms, Speaker</i> )
1992-1993	Under the Elms
	Academic Code Committee
1993-1994	Departmental Advisory Committee
	Academic Code Committee
	Departmental Advisory Committee
	Faculty Search Committee
	Curriculum Advisor Program (CAP)
1994-1995	Sophomore Advisor
	Brown Alumni Lecture (N. Kingston, RI)
	Academic Code Committee
	Building Committee
	Departmental Computer Committee

	Faculty Search Committee
	Curriculum Advisor Program (CAP)
	Tenure Review Committee
1995-1996	Academic Code Committee
	Curriculum Advisor Program (CAP)
	Sophomore Advisor
	Curriculum Committee
1996-1997	Curricular Advisor Program (CAP)
	Academic Code Committee
	Curriculum Committee
<b>1997-1998</b>	<b>Sabbatical</b>
1998-1999	Curricular Advisor Program (CAP)
	Library Committee
	Sophomore Advisor
1999-2000	Curricular Advisor Program (CAP)
	Library Committee
	Keynote speaker, Points on the Compass, (General Assembly),
	Department Curriculum Committee
2000-2001	Curricular Advisor Program (CAP)
	Sophomore Advisor
	Building Committee
	Professional Development Committee
2001-2002	Sophomore Advisor, Computer Committee
	WiSE Faculty Advisor
	CAP Advisor
2002-2003	Department Colloquium Committee
	CAP Advisor
	WiSE Faculty Advisor
	Undergraduate Low-Gravity Flight Opportunity (KC-135) Advisor
2003-2004	CAP Advisor (2004, spring); sabbatical (2004, fall)
	Undergraduate Low-Gravity Flight Opportunity (KC-135) Advisor
<b>2004-2005</b>	<b>Sabbatical</b> (spring), leave (fall)
	“Boldly Brown” participant
	“Brown Commencement Forum” participant (May)
2006	CAP advisor, sophomore advisor
2007	CAP advisor, sophomore advisor
2008	Freshman advisor, sophomore advisor,
2009	Freshman Advisor, Sophomore Advisor, <i>CAP</i> advisor.
2010	Sophomore advisor
	Media Relations Interviews

2011	Freshman Advisor, Sophomore Advisor, CAP course, Freshman Seminar, Planetary Faculty Search Committee, Graduate Student Research Advisory Committees (6) Young Faculty Mentoring Committee
2012	Freshman Advisor, Sophomore Advisor, CAP course, Graduate Student Research Advisory Committees (6) Young Faculty Mentoring Committee
2012	Sabbatical Leave (fall; spring) Young Faculty Mentoring Committee
2013	Senior Thesis advisor Graduate Student Research Advisory Committees (5)
2014	Professor Research Graduate Student Research Advisory Committees (4)
2015	Professor Research Graduate Student Research Advisory Committees (4)
2016	Professor Research Graduate Student Research Advisory Committees (4)
2017	Professor Research Graduate Student Research Advisory Committees (4)

**b. TO THE PROFESSION (1976-2017)**

<b>1975-1976</b>	Organizer of <i>Planetary Geology Workshop for Educators of Fairfax County</i> (Skyline Lodge, VA)
<b>1976-1981</b>	<i>Basaltic Volcanism</i> Study Project, Member
<b>1977</b>	Associate Editor, <i>Proceedings of the Conference on Comparisons of Mercury and the Moon</i>
<b>1976-1977</b>	<i>NASA Proposal Review Panel</i> , Planetary Geology
<b>1978-1980</b>	<i>NASA Planetary Cartography Working Group</i> , member
<b>1980</b>	Convener and Co-Editor, <i>Conference on Multi-ring Impact Basins</i>
<b>1982</b>	Science Advisor for <i>Mars: Evolution of its Climate and Atmosphere</i> (MECA) Study Project (LPI)
<b>1981-1983</b>	<i>NASA Proposal Review Panel</i> , Lunar and Planetary Geology and Geophysics
<b>1982</b>	Co-Editor, <i>Proceedings of the National Academy of Sciences Conference on the Large Body Impacts and Terrestrial Evolution: Climatological and Biological Implications</i>

**1982-1983** Chairman, *NASA Regional Planetary Image Facilities Directors' Committee*

**1985** Chairman of *NASA Working Group on Impact Experiments on the Space Station* (Workshop on Space Station Planetology Experiments, Flagstaff, AZ, June 1985)

**1985-1987** Associate Editor, *Reviews of Geophysics*

**1986** Member of NASA's *Lunar Geoscience Working Group* (a group responsible for documenting a scientific rationale for future lunar exploration)

**1986-1989** Member of *Planetary Geology Working Group* (an advisory panel for NASA's Planetary Geology and Geophysics Program)

**1987-1989** *Planetary Data Science* Steering Group (NASA Advisory Committee)

**1987-1990** *Committee on Planetary and Lunar Exploration* (National Academy of Sciences/National Research Council)

**1991-1994** Editorial Advisory Board, *Earth in Space*, American Geophysical Union

**1992** Organizing Committee for *1992 Hypervelocity Impact Symposium* (Austin, TX)

**1992** Review Panel, *Venus Data and Analysis Program*

**1993** Organizing Committee for *1994 Hypervelocity Impact Symposium* (Santa Fe, NM)

**1994-1996** *NASA Planetary Geology and Geophysics* Review Panel

**1994-1997** Editorial Board, *Geology*

**1994-1996** Organizing Committee for *1996 Hypervelocity Impact Symposium* (Freiburg, Germany)

**1995-1997** *Planetary Data Science* Steering Group

**1999-2000** Organizing Committee for *2000 Hypervelocity Impact Symposium*  
Frequent Chairman at national scientific meetings

**2000-2001** Organizing/Review Committee for *2000 Hypervelocity Impact Society*  
Review Committee for *RPI Astrobiology NSCORT* Program "Origins of Life: Interstellar molecules to Introns"

**2001-2002** Review Committee for *RPI Astrobiology NSCORT* Program "Origins of Life: Interstellar molecules to Introns"  
*Lunar and Planetary Science Conference* Organizing Committee  
Review Panel, *NASA Planetary Geology and Geophysics*  
Chair, *Regional Planetary Image Facilities Directors' Council*

**2002-2003** Review 15-20 papers and proposals per year  
*Lunar and Planetary Science Conference* Organizing Committee  
Review Panel, *NASA Planetary Geology and Geophysics*  
*NASA Management Operations Working Group* Member  
Chair, *Regional Planetary Image Facilities Directors' Council*  
Hosted *Northeast Regional Space Grant Consortia* Meeting  
Chair, *Mars Wind Tunnel Site* Review Committee

- 2003-2004** Review 15-20 papers and proposals per year  
*NASA Management Operations Working Group* Member  
 Chair, *Regional Planetary Image Facilities* Directors Council  
*Mars Data Analysis Program* Review Panel
- 2005** Reviewed 15-20 papers and proposals per year  
*NASA Management Operations Working Group* Member  
 Chair, *Regional Planetary Image Facilities Directors' Council*  
*Regional Planetary Image Facility* Site Review Committee
- 2006** Reviewed 15-20 papers and proposals per year  
 Lunar and Planetary Institute 5-Year Review Committee (November)  
 Planetary Geology and Geophysics Proposal Review Panel (July)  
*NASA Management Operations Working Group* Member  
 Chair, *Regional Planetary Image Facilities Directors' Council*  
 Member, *Regional Planetary Image Facility* Site Review Committee
- 2007** Review 20 papers and proposals per year  
 Chair: Review Committee for *Planetary Aeolian Laboratory* (NASA Ames)  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance*, Board Member  
*NASA Management Operations Working Group*, Member  
*Planetary Aeolian Laboratory* Review Committee, Chair  
*Regional Planetary Image Facilities* Directors' Council, Chair  
*Regional Planetary Image Facility* Site Review Committee, Member
- 2008** Reviewed ~30 papers and proposals  
 Hosted *NASA Ames Vertical Gun Range Review* at NASA Ames  
*Planetary Geology and Geophysics* Review Panel  
*Executive Committee*, *National Space Grant Consortium*, elected Member  
*National Space Grant Alliance*, elected Board Member  
*NASA Management Operations Working Group*, Member  
*Regional Planetary Image Facilities* Directors' Council, Chair  
*Regional Planetary Image Facility* Site Review Committee
- 2009**  
 Reviewed ~10 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance*, elected Board Member  
*Regional Planetary Image Facilities*, Director Council, Chair  
*11<sup>th</sup> International Hypervelocity Impact Symposium*, Organizing Committee  
*NASA Ames Vertical Gun Science Coordinator*
- 2010**  
 Reviewed ~15 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
*Regional Planetary Image Facilities*, Directors' Council, Chair  
*11<sup>th</sup> International Hypervelocity Impact Symposium*, Review Committee  
*AGU Americas*, Organizing Committee

*NASA Ames Vertical Gun Science Coordinator*  
 Hosted the *Regional Space Grant Directors'* meeting (September, 2010, Newport, RI);  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator, *NASA Ames Vertical Gun Range* (1979-present)  
*National Space Grant Directors' Conference* (Washington DC, March 2010)  
*National Space Grant Alliance* meeting (Washington DC, March 2010)  
*National Space Grant Executive Committee* meeting (Washington DC, March 2010)  
*National Space Grant Alliance* transition meeting (Washington, DC, August 2010)  
*National Space Grant Executive Committee* transition meeting (Washington, DC, August 2010)  
*National Space Grant Directors' Conference* (Portland, ME, October 2010);  
*National Space Grant Alliance* meeting (Portland, ME, October 2010)  
*National Space Grant Executive Committee* meeting (Portland, ME, October 2010)

## 2011

Reviewed ~12 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator, *NASA Ames Vertical Gun Range* (1979-present)  
*National Space Grant Directors' Conference* (Washington DC; March 2011)  
*National Space Grant Alliance* meeting (Washington DC; March 2011)  
*National Space Grant Executive Committee* meeting (Washington DC; March 2011)  
*National Space Grant Directors' Conference* (Green Bay, WI; September 2011);  
*National Space Grant Alliance* meeting (Green Bay, WI; September 2011)  
*National Space Grant Executive Committee* meeting (Green Bay, WI; September 2011)  
*Northeast Planetary Image Facilities Directors'* meeting (Flagstaff, AZ; October 2011)  
*Regional Space Grant Directors* meeting (Portsmouth, NH; June 2011)

## 2012

Reviewed ~12 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator and PI, *NASA Ames Vertical Gun Range* (1979-present)  
*National Space Grant Directors' Conference* (Washington DC; March 2012)

*National Space Grant Alliance* meeting (Washington DC; March 2012)  
*National Space Grant Executive Committee* meeting (Washington DC; March 2012)  
*National Space Grant Directors' Conference* (Seattle, WA; October 2012)  
*National Space Grant Alliance* meeting (Seattle, WA; October 2012)  
*National Space Grant Executive Committee* meeting (Seattle, WA; October 2012)  
*Northeast Planetary Image Facilities Directors'* meeting (Tempe, AZ; November 2012)  
*Regional Space Grant Directors* meeting (Burlington, VT; June 2011)

## 2013

Reviewed ~10 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator and PI, *NASA Ames Vertical Gun Range* (1979-present)  
*National Space Grant Directors' Conference* (Washington DC; March 2013)  
*National Space Grant Alliance* meeting (Washington DC; March 2013)  
*National Space Grant Executive Committee* meeting (Washington DC; March 2013)  
*National Space Grant Directors' Conference* (Charleston, SC; October 2013)  
*National Space Grant Alliance* meeting (Charleston, SC; October 2013)  
*National Space Grant Executive Committee* meeting (Charleston, SC; October 2013)  
*Northeast Planetary Image Facilities Directors'* meeting (Cornell, Ithaca; November 2013)

Reviewed ~12 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator and PI, *NASA Ames Vertical Gun Range* (1979-present)  
*National Space Grant Directors' Conference* (Washington DC; March 2012)  
*National Space Grant Alliance* meeting (Washington DC; March 2012)  
*National Space Grant Executive Committee* meeting (Washington DC; March 2012)  
*National Space Grant Directors' Conference* (Seattle, WA; October 2012)  
*National Space Grant Alliance* meeting (Seattle, WA; October 2012)  
*National Space Grant Executive Committee* meeting (Seattle, WA; October 2012)  
*Northeast Planetary Image Facilities Directors'* meeting (Tempe, AZ; November 2012)  
*Regional Space Grant Directors* meeting (Burlington, VT; June 2011)

## 2014

Reviewed ~9 papers and proposals  
*Executive Committee*, National Space Grant Consortium, elected Member  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
 Science Coordinator *NASA Ames Vertical Gun Range* (1979-2014)  
*National Space Grant Directors' Conference* (Washington DC; March 2014)  
*National Space Grant Alliance* meeting (Washington DC; March 2014)  
*National Space Grant Executive Committee* meeting (Washington DC; March 2014)  
*National Space Grant Directors' Conference* (Charleston, SC; October 2014)  
*National Space Grant Alliance* meeting (Charleston, SC; October 2014)  
*National Space Grant Executive Committee* meeting (Charleston, SC; October 2014)  
*Northeast Planetary Image Facilities Directors' meeting* (Washington, DC; November 2014)

## 2015

Reviewed ~10 papers and proposals  
*Executive Committee*, National Space Grant Consortium (elected Member)  
*National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
*National NASA Space Grant Directors' Conference* (Washington DC; March 2015)  
*National NASA Space Grant Alliance* meeting (Washington DC; March 2015)  
*National NASA Space Grant Executive Committee* meeting (Washington DC; March 2015)  
*National NASA Space Grant Directors' Conference* (Tucson, AZ; October 2015)  
*National NASA Space Grant Alliance* meeting (Tucson, AZ; October 2015)  
*National NASA Space Grant Executive Committee* meeting (Tucson, AZ; October 2015)

## 2016

Reviewed ~11 papers and proposals  
*Executive Committee*, National Space Grant Consortium (elected Member)  
*NASA National Space Grant Alliance* (elected Board Member)  
 Director, *Northeast Planetary Data Center* (1984-Present)  
 Director, *NASA/Rhode Island Space Grant Consortium* (1990-Present)  
*NASA National Space Grant Directors' Conference* (Washington DC; March 2016)  
*NASA National Space Grant Alliance* meeting (Washington DC; March 2016)  
*NASA National Space Grant Executive Committee* meeting (Washington DC; March 2016)  
*Regional NASA Space Grant Directors' Conference* (New York, NY; October 2015)



**c. *TO THE COMMUNITY (1984-2017), only since coming to Brown***

Director, Northeast Planetary Data Center (1984-Present)  
Director, NASA/Rhode Island University Space Grant Consortium (1990-Present)  
Brown Learning Community Instructor: *Halley's Comet* (Fall 1985); *The History, Methods, and Frontiers of Cartography* (Spring 1986); initiated *Brown Academy of Junior Scientists*  
Frequent Guest Speaker at local and national astronomy clubs  
Member of National Stereoscopic Association and Photographic Historical Society of New England  
Guest Lecturer, Skyscrapers Annual Convention (1992)  
Guest Lecturer, Ladd Observatory Speakers Series (1984-present)  
Workshop for Warwick Elementary Science Teachers (1989, 1990)  
Keynote Speaker at Astronomical League Convention, 1991 (Springfield, MA)  
Co-organizer "Dinosaurs in Space: Walks and Talks on an Evolving Planet" (in coordination with Roger Williams "Dynamation Exhibit," 1992)  
Co-organizer "Science Posters Contest" for Warwick Elementary Schools (1992, 1993, 1994, 1995, 1996)  
Keynote Speaker, Hartford Astronomy Day (May, 1993)  
Dinner Speaker for Brown Learning Community "Teachers Overnight: Evening Under the Stars" (May, 1993)  
Keynote Speaker, Northeast Region of the Astronomical League, Springfield, MA (June, 1993)  
Co-organized "Lost Worlds: From Jurassic Park to Mars," a Workshop for RI Science Teachers (August, 1993)  
Keynote Speaker for *Custer Institute's* (Long Island) *Astronomy Jamboree* (October, 1993)  
Lecturer at *Roger Williams Park*, "Chicken Little Was Right" (February, 1994)  
Participant: Providence Math-Science Coalition Project (1994)  
Participant: *Zooscape* (Brown and Roger Williams Park series, Summer 1994)  
Organizer: Planetary Catastrophes Workshop for RI Teachers (July, 1994)  
Speaker at *Skyscrapers* Astronomy Club Meeting (September, 1994)  
Organizer: *Planetary Data Center* Open House "Legacy of Apollo" (evening public lectures with viewing of Shoemaker-Levy 9 collision), 1994  
Host for "Warwick Elementary Schools Award Ceremony: Space Poster Contest" (Fall, 1995)  
Co-organizer and contributor "Mapping Worlds" (Joint NASA Space Grant and Institute for Secondary Education Seminar Series for Teachers, Spring 1995)  
Co-organizer and contributor "Fly Me to the Moon: Apollo 13 Workshop for Rhode Island K-12 Teachers" (Brown University, Fall 1995)  
Co-hosted poster and booth at the "New England Conference on Technology Transfer" (Providence, August 1995)  
Speaker at the *Rhode Island Science Teachers Association* (RISTA) Convention, (1997)  
Banquet Speaker at the *Skyscrapers Astro Assembly*, (1997)  
Involvement with various educational groups and initiatives in Rhode Island and at Brown to bring NASA science and exploration into the classroom (Rhode Island College, NASA

Resource Center, Roger Williams Park Museum, Aerospace States Association, RI  
 Science Teachers Association, Lt. Governors Office, IESE  
 Mentored two high school students (under-represented minority student at Mt. Pleasant High  
 School and student at Lincoln School), 1996-1999  
 Speaker at the Rhode Island Science Teachers Association (RISTA) Convention, (1997,  
 1998)  
 Guest Speaker at *RI Audubon Society*, 1998  
 Banquet Speaker at *StarCon* (National Amateur Astronomers Convention), 1998  
 Boy Scout Award Ceremony, Guest Speaker, East Greenwich (1997)  
*Presentation Speaker*, Lt. Governor's Office (RI, 1998)  
 Speaker, *Jamestown Rotary Club* (RI, 1999)  
 Speaker, *RI Association for Retired Principals and Superintendents* (1999)  
 Presentation Speaker, "Comet Chasers" Day (Charleston, RI 1999)  
 Keynote, *New England Chemistry Teachers Association* (Roger Williams University, 2000)  
*Boston Bay Group Colloquium* (MIT, 2000)  
*Sigma Xi*; Banquet Talk (Brown University, 2000)  
 Custer Institute *Astronomy Jamboree* (Southold, Long Island, NY 2001)  
 Keynote Speaker, *Science Teachers Association* (RISTA, RIC, 2002)  
 Banquet Speaker, *Astro-Assembly* (2002)  
 Keynote, RI Natural History (URI, 2002)  
 Guest Speaker, 2003 *Astro-Assembly*  
 Guest Speaker, 2003 *StarConn* (Wesleyan U., Middletown CT)  
 Invited Speaker, International Photo-History Symposium (George Eastman House, fall  
 2003)  
 Keynote Speaker, "*The Conjunction*" (Connecticut River Valley Astronomical Convention,  
 2004 spring)  
 Keynote Speaker, *SPARK* (2004 Brown University Summer Studies)  
 Invited Award Presenter to Astronaut Woody Spring (2004 fall, *RI Aviation Hall of Fame*)  
 Invited Speaker, *Photographic Historical Society of New England*, "The History of 19<sup>th</sup>  
 Century Lens Makers" (2004 spring)

## 2005

*Deep Impact* Teacher Workshop Lecturer (NASA Kennedy, January)  
*Deep Impact* Teacher Workshop, Lecturer and Organizer (Roger Williams Park Museum,  
 January-July)  
*Maine Space Day* (Auburn, Maine, May)  
*Maine Astronomy Club* (Portsmouth, Maine, May)  
*Brown Commencement Forum* (May)  
 Guest Presenter, *Chautauqua Workshop* (June, Flagstaff, AZ)  
 Brown University Summer School (July, guest lecturer)  
 Ladd Observatory Astronomy night (Public Speaker, September)  
*Rutgers Museum of Natural History* (November, New Brunswick, NJ)  
 "Boldly Brown" Fund Raising Evening Speaker (October)  
*Rhode Island Hospital Forum* (December, with Karen Meech, U. Hawaii, December)  
 Director, Northeast Planetary Data Center (1984-Present)

Director, NASA/Rhode Island University Space Grant Consortium (1990-Present)  
Brown University Alumnae Lecture about Results from Deep Impact (November)

## 2006

*Benjamin Dean Lecture*, Morrison Planetarium (San Francisco January, 2006)  
Brown University Summer School (Providence, RI; July 21, 2006, guest lecture about DI)  
Keynote Speaker (Providence, RI; July 29): Brown University Summer Studies for Middle School participants and parents.  
Deep Impact Teacher Workshop (with Karen Meech): Hawaii (February 25, 2006)  
Banquet Talk, *Houston Astronomical Society* (March 11, 2006):  
Guest Speaker for Brown's *VIGOR Program* (linking undergraduate education in math with other disciplines, February 11, 2006):  
Invited *Carleton Alumnae Reunion* Talk (Carleton College, June 2006)  
Brown University Staff Day (Providence, RI; June 7, 2006)  
Roger Williams Park Museum: Contributed materials and content to the exhibit comparing the Lewis and Clark expedition and planetary exploration (January, 2005-September, 2006)  
Roger Williams Park Museum: assisted in exhibit on *Extreme Living* (January, 2005-September, 2006)

## 2007

Invited Public Talk: *Prairie Astronomy Club* (October, Lincoln, NE)  
Invited Keynote: 75<sup>th</sup> Annual *Astro-Assembly* Meeting, September 28 (Seagrave Observatory)  
Invited Keynote: *The Conjunction* (Connecticut Valley Astronomy Society)  
Mars exhibit: Sponsored *Mars Express 3-D* exhibit at the *Roger Williams Park Natural History Museum*  
Mars Educator Workshop: Participated in workshop for teachers connected to the Mars 3D exhibit  
Hosted *NE Data Center* Annual Meeting: The international network of *Regional Planetary Image Facilities* met in the Northeast Planetary Data Center in November  
Hosted the *RI Space Grant Consortium Symposium*: Hosted the annual day-long symposium that highlighted activities (faculty research, undergraduate/graduate research, educational activities, classroom development, etc.).

## 2008

Chaired *NE Data Center* Annual Meeting: The international network of *Regional Planetary Image Facilities* met in Tucson (Dec. 2008)  
Hosted the *RI Space Grant Consortium Symposium*: Chaired the annual daylong symposium that highlighted activities (faculty research, undergraduate/graduate research, educational activities, classroom development, etc.) at *Roger Williams University*  
Contributed to: "*Mission Moon: Past, Present, Future*" at the Museum of Natural History, Roger Williams Park (April 9, 2008)

Invited talk at *Southern Maine Astronomers*, “Chicken Little or Armageddon!” (June 2008)  
*Brown Family Weekend*: “Chicken Little or Armageddon: The Day the Sky Fell in Peru”  
(October, 2008)

*Brown Alumni Weekend*: “The Moon: Dead or Alive” (September, 2008)

*Brown Staff Development Day*: “Chicken Little or Armageddon” (June, 2008)

*Brown Summer School*: Contributed to SPARK (July, 2008), due to illness of discussion leader

*Brown Continuous Learning in Retirement*: April 9, 2008 talk in the Northeast Planetary Data Center

Participated in:

*Northeast Planetary Image Facilities Directors’ meeting* (Tucson, December, 2008)

*Regional Space Grant Directors’ meeting* (September, CT)

*National Space Grant Directors’ Conference* (Atlanta, October 2008)

*National Space Grant Executive Committees meeting* (Atlanta, October 2008)

## 2009

Hosted the *RI Space Grant Consortium Symposium*: Chaired the annual daylong symposium that highlighted activities (faculty research, undergraduate/graduate research, educational activities, classroom development, etc.) at *Bryant University* (November, 2009)

Hosted *Northeast Planetary Data Center Open House* for students and faculty from U. Maine, *LCROSS Mission* (November, 2009)

Presented *Shooting the Moon* at Museum of Natural History as part of Educator Short Course on Lunar Geology (July, 2009)

Invited banquet talk (*Deep Impact Encounter*) for the *Century Club*, Springfield, Mass (February)

## 2010

Hosted the *Regional Space Grant Directors’ meeting* (September, 2010, Newport, RI);  
Keynote Speaker: The *Astronomy & Space Exploration Society* (ASX) before 800 students/faculty/public at the University of Toronto, along with noted leaders in space exploration from JPL, India, and Canada.

Invited talk: *Lunar Exploration Analysis Group (LEAG) Meeting*: “Shooting the Moon: A Review of the LCROSS Results” (Washington, DC).

Keynote Speaker: *25<sup>th</sup> Anniversary of the DLR Regional Planetary Image Facility* (Berlin, Oct., 2010). This invited talk was coupled to the opening of 3D Mars at DLR (Germany’s equivalent to NASA’s JPL).

*Educator Cooperative Institute*, Educator Science Institute, Dedham Mass (July, 2010)

*Kaneko Public Forum*, Omaha, Nebraska (June, 2010)

*Mid-States Regional Astronomical League Convention and Prairie Astronomy 50<sup>th</sup> Anniversary Celebration*, University of Nebraska, Lincoln, Nebraska (June, 2010).

Banquet Keynote Speaker, *Western Alliance of Planetariums Conference*, Omaha, Nebraska (August, 2010)

Evening Keynote Speaker, *Lunar Observing Workshop* at the *Stellafane Telescope Makers Convention*, Springfield, Vermont (August, 2010)  
Organized the *Rhode Island Space Grant* and *EPSCoR Symposium* meeting (Bryant U.)  
Hosted and participated in *Northeast Planetary Data Center* Open House (May and October, 2010)

## 2011

Two Invited talks for the “International Observe the Moon Night” October 8<sup>th</sup> (*McAuliffe-Shepard Discovery Center*, Concord, NH).  
NASA’s Lunar Reconnaissance Orbiter (LRO) Lunar Workshop, June (University of New Hampshire, Durham)  
Invited Banquet Talk: *AstroAssembly* (North Scituate, RI)  
Organized the *Rhode Island Space Grant* and *EPSCoR Symposium* meeting (April, RISD)  
Hosted and participated in *Northeast Planetary Data Center* Open House (May and October, 2011)

## 2012

Public Talk: *SkyScrapers Astronomy Club*: “My Moon” (July, North Scituate, RI)  
Public talk: *Worcester Gem Mineral Club*: “Making the Man in the Moon” (November, Shrewsbury, MA)  
Public talk: *History of Space Photography* (*Photographic Historical Society* of New England)  
Organized: *Rhode Island Space Grant* and *EPSCoR Symposium* meeting (April, URI)  
Hosted the final team science meeting of NASA’s *DIXI* and *Stardust-NEXT* (July, National Academy of Science, Cape Cod, MA)  
Co-sponsored exhibit and opening at the Museum of Natural History (Providence): *Space Weather*  
Co-sponsored exhibit and opening at the Museum of Natural History (Providence): *Saturn: Images from the Cassini-Huygens Mission*  
Developed and co-sponsored exhibit opening of *Trekking across Mars with Curiosity* (Museum of Natural History, Providence)  
Hosted and participated in *Northeast Planetary Data Center* Open House: Commencement (May, 2012) and Family Day (October, 2012)

## 2013

Public Talk: *SkyScrapers Astronomy Club*: “History of Space Photography” (North Scituate, RI)  
Co-sponsored exhibit opening of “*Dynamic Galaxies: Our Place in the Universe*” (Museum of Natural History, Providence)  
Hosted and participated in *Northeast Planetary Data Center* Open House: Commencement (May, 2013) and Family Day (October, 2013)  
Hosted: *Rhode Island Space Grant* and *EPSCoR Symposium* (April, Brown U.)

## 2014

Hosted and participated in *Northeast Planetary Data Center* Open House: Commencement (May, 2014) and Family Day (October, 2014)  
Hosted: *Rhode Island Space Grant* and *EPSCoR Symposium* (April, Wheaton College, MA)  
Public talk: “*Against the Odds: The Story of the Trumbull Interchangeable Panoramic Camera*” (George Eastman House, October)

## 2015

Developed and co-sponsored exhibit opening of “*Icy Worlds & the Discoveries of DAWN and New Horizons*” (Museum of Natural History, Providence)  
Hosted and participated in *Northeast Planetary Data Center* Open House: Commencement (May, 2015) and Family Day (October, 2015)  
Hosted: *Rhode Island Space Grant* and *EPSCoR Symposium* (April, Salve Regina, RI)  
Public talk: *From my Little Red Wagon to a Rendezvous with a Comet* (Carberry Lecture, Brown)  
Public talk: “*Against the Odds: The Story of the Trumbull Interchangeable Panoramic Camera*” (PHSNE, Boston)  
Public talk: “*Making the Man in the Moon*” (San Juan, Argentina)

## 2016

Hosted: *Rhode Island Space Grant* and *EPSCoR Symposium* (April, Museum of Natural History, RI)  
Public talk: *From my Little Red Wagon to a Rendezvous with a Comet* (Carberry Lecture, Brown)  
Public talk: “*Against the Odds: The Story of the Trumbull Interchangeable Panoramic Camera*” (PHSNE, Boston)  
Public talk: “*A Career of Exploration: My Backyard and Beyond*” (Ladd Observatory 125<sup>th</sup> anniversary celebration)

### **d. OTHER EDUCATIONAL AND OUTREACH ACTIVITIES (1974-2017)**

Co-organizer, *A Short Course in Lunar Geology* (1974, NASA-Ames, California)  
Co-organizer, *A Short Course in Lunar Geology* (1976, Fairfax, Virginia)  
Instructor, *Lunar Geology Short Course* (1976, Lunar and Planetary Institute, Houston)  
Instructor, *Planetary Geology Short Course* (1978, Arizona State University)  
Instructor, *Planetary Geology Short Course* (1985, Geological Society of America)  
BBC TV Science Series, *Shoot the Moon*  
Featured in Disney TV Production, *Scheme of Things*  
Featured in Life Magazine, *Masters of the Universe*  
Featured in Japanese Broadcasting Corporation TV Series (NHK) on the Evolution of the Earth  
Featured in Public Broadcasting System TV Series, *Planet Earth*

Featured Interview in Japanese Popular science magazine *Newton*  
 Disney Exhibit on 3-D space images (Disneyland, Japan)  
*Planetary Geology Speakers' Bureau* Participant (1988-1990)  
 Featured Video Speaker in American Museum of Natural History (NYC) theater exhibit on  
 Meteorites (1990-present)  
 Featured in Public Broadcasting System TV Series, *Miracle Planet*  
 Featured in Japanese (NHK)/WQED TV production, *Space Age*  
 Instructor in Annual Workshops on Planetary Exploration for New England Educators  
 (1984-present)  
 Advisor for *Newton's Apple* (Aired in October, 1993)  
 Advisor for BBC *Horizons* TV Series "*Doomsday Asteroid*" (aired in Britain, 1994; in  
 United States, 1995)  
 Advisor for NHK TV Special *Planet of Life* (aired in Japan 1994, in United States, 1995)  
 Featured in NHK Television Program on "*Chicxulub and the Mayans*" (aired in 1995, Japan  
 only)  
 NPR radio interview (Space Grant) about "*Life on Mars*" (August, 1996)  
 NPR "Science Friday" radio interview concerning new theory about Chicxulub impact  
 (January, 1997)  
 NPR "Science Friday" radio (Space Grant) about "*Life on Mars*" (August, 1996)  
 Featured in Discovery 2000 Television Series (Spring, 1998)  
 Featured in Brazilian Science TV Series (aired Spring, 1997)  
 Live interviews (NPR, BBC) dealing with new impact in Argentina (1998, 1999)  
 Featured in Discovery 2000 Television Series (Spring, 1998)  
 Featured in new BBC Horizon TV Series ("*Crater of Death*") about the Chicxulub impact  
 (aired worldwide in 1998)  
 Featured in WGBH "*Origins*" A Science Odyssey TV Series (aired in Spring, 1998)  
 Featured in NHK-TV Program about the *History of Apollo* (1998, 1999)  
 Featured in WGBH/WQED TV program (aired in 2001), "*96 Worlds and Counting*"  
 involving impact studies  
 Featured in BBC TV program (aired in 2001/02), "*Projectiles*", involving impact studies  
 Featured in Discovery Channel production (aired in 2001/02), "*Fireballs in Space*" about  
 Argentina and laboratory impact studies  
 Guest Speaker for Brown's VIGOR Program (linking undergraduate education in math with  
 other disciplines, 2002)  
 Featured in NHK TV Program (Living Planet, to air in 2004)  
 Facilitated 2003 Summer Studies Planetary Geology Courses (through Space Grant)  
 Facilitated 2004 Summer Studies Planetary Geology Courses (through Space Grant) for high  
 school juniors/seniors.  
 Facilitated new 2004 Summer Studies Planetary Geology Courses (through Space Grant) for  
 middle school (SPARK)  
 Participated in new NHK TV Production of "*Miracle Planet*" (to air 2005)  
 Participated in new Discovery TV Program about Deep Impact (to air in July 2005)

## 2005

Pre-encounter press conference (June): Brown University  
 Pre-encounter press conference (June): NASA Ames Research Center (June)

Pre-encounter press conference (June): NASA JPL  
Post-encounter Press conference, July 4: NASA JPL  
Media Interviews: NPR Radio (June), local television stations (ABC, NBC, CBS),  
Associated Press, etc.  
Research featured on: Discovery Channel ("*Comet Collision*"), NHK Television program,  
Australian Broadcasting (ABC), British Broadcasting Corporation (BBC)  
Hosted: Special showing of IMAX, "Magnificent Desolation" (Space Grant)

## **2006**

Featured on

*NPR Radio* (November)  
Local television programs  
*British Broadcasting Corporation (BBC)* radio (November),  
*Astronomy Magazine*  
*Popular Science*  
*Science*  
*Scientific American*,  
*Geotimes*

Research featured on:

*KQED* program about the LCROSS mission (aired 2007)  
*National Geographic* programs (2007);  
*British Broadcasting Corporation (BBC)*, aired 2007)

## **2007**

Participation in Media Productions

National Geographic: *Naked Science*, *Peru impact*, *Comets and Asteroids*  
NPR radio interview (Ira Flato, *Science Friday*):  
History Channel: *The Universe*  
BBC: *Returning to the Moon* (LCROSS mission)

## **2008**

Media interviews (Carancas-LPSC interviews)

*BBC World News* (radio)  
*Reuters*  
*Space.com*  
*Astronomy*  
*Sky and Telescope*  
*Science*  
*Earthfiles* (radio)  
*Scientific American*

Participation in Media Productions

*Canadian Discovery*: December  
*NOVA-NOW*: December  
*National Geographic*: July  
*National Geographic*, *Earth Shocks*, Series 2, June  
*National Geographic*, *Naked Science*: Planet Science (*Cracking the Earth's Crust*) March



*Canadian Discovery: March*  
*NASA Webcast (LCROSS): May*  
*Discovery Channel: May*  
*National Geographic/Discovery Canada “Naked Science 5” (about Carancas impact)*  
*British Broadcasting Corporation (Sky at Night): Last Man on the Moon and Return to the Moon*

## **2009**

*Featured in various television productions: History Channel (Known Universe); National Geographic; History Channel Production*  
*Canadian Discovery Channel; BBC*

*Media interviews: AP, Providence Journal, National Geographic, Popular Mechanics, NPR, PBS, Sky and Telescope, Science, etc.*

## **2010**

*Featured in various television productions: History Channel (Known Universe); National Geographic; History Channel Production*  
*Canadian Discovery Channel; BBC*

*Media interviews: AP, Providence Journal, National Geographic, Popular Mechanics, NPR, PBS, Sky and Telescope, Science, etc.*

*NASA Press Conference (NASA Headquarters): EPOXI Encounter with Hartley-2 post encounter (JPL); Science results announcement (NASA Headquarters).*

## **2011**

*Featured in new television productions: History Channel (Known Universe II); National Geographic; History Channel Production How the Universe Works-2 (Comets); How the Universe Works-2 (Asteroids)*

*Media interviews: AP, Time Magazine, Science Christian Monitor, Scientific American, Sky and Telescope, New Scientist, Los Angeles Times, Nature News, NY Times, Science*

*NASA Press Conference: Stardust-NExT Encounter (NASA Headquarters)*

## **2012**

*Featured in new television productions: History Channel (Known Universe II, Alien Worlds)*

## **2013**

*Participated in new television productions: NOVA, Science Channel, Discovery, History Channel (airing in 2013 and 2014).*

## **2014**

*Featured in 7 new television productions: including Wired Magazine, NOVA, Fox, and NPR’s Radio Lab.*

## 2015

Featured in new television productions: *Weather Channel* (about organic survival from impacts); *French TV* (about impact effects); *NHK-TV* (about lunar cratering); *Strip the Cosmos*, *Discovery Channel* (about the effect of impact angle on extinctions); *Daily Planet*, *Canadian TV* (about the nearside/farside dichotomy on the Moon); and *Discovery Program* (about lunar swirls).

Featured in numerous media releases about lunar swirls, meteorite delivery on Ceres and Vesta, asteroid threats.

## 2016

Featured in new television production: NASA's Unexplained Files, *Science Channel* (NASA's Unexplained Files)

Featured in numerous media releases about the size of the asteroid forming the Imbrium basin on the Moon, from a published paper in *Nature* (*World Service*, BBC; *Scientific American*; etc.)

## 2017

Featured in new television production: BBC Horizon Series (*Mars a Traveler's Guide*); Discovery Science Channel (*Missing*)

Featured on *Science Friday*: Featured story about discovery of impact glasses in Argentina

## 8. HONORS AND AWARDS

2013 *Fellow*, Geological Society of America, Denver, CO

2012 *G. K. Gilbert Award* (Geological Society of America), Charlotte, NC

2010 *HVIS Distinguished Scientist Award* (International Hypervelocity Impact Society), Freiburg, Germany

2008 Award of Excellence, *Ten Best Oral Presentation Award*, American Association of Petroleum Geologists (AAPG) National Meeting, San Antonio

2006 *Distinguished Alumnae Achievement Award*, Carleton College, Northfield, MN  
Asteroid 6952 named "PeteSchultz"

2004 *Barringer Medal Award* (for achievements in impact research)

*Certificate of Special Recognition*, 2000 (U.S. House of Representatives)

*Certificate of Appreciation*, 2000 (RI House of Representatives)

Best Paper Award, 1992 *Hypervelocity Impact Society* Conference (Crawford/Schultz)

Best Paper Award, 2000 *Hypervelocity Impact Society* Conference (Dahl/Schultz)

*NASA Group Achievement Award* (Magellan Project), 1992

*NASA Group Achievement Award* (DIXI Science Team), 2011

*Medal of Achievement*, National Academy of Sciences of Argentina, Cordoba  
Sigma Xi

*NASA Traineeship*, 1968-1971

Phi Kappa Phi, 1972

## Graduate Student Presentation Awards:

### ***DWORNIK AWARD:***

**1995**-oral (Olivier Barnouin-Jha)  
**1999**-oral (Carolyn van der Bogert)  
**2000**-poster (Carolyn van der Bogert\*)  
**2000**-oral (Jennifer Anderson)  
**2001**-poster (Jennifer Anderson\*)  
**2002**-oral (Kelly Wrobel\*)  
**2003**-oral (Brad Thomson\*)  
**2009**-oral (Brendan Hermalyn\*)  
**2017**-oral (R. Terik Daly\*)

### ***AGU OUTSTANDING STUDENT PAPER AWARD:***

**2010** - poster (Angela Stickle\*)

\*Top Award

## Past Proposal Awards (Since 1984):

NASA-NAGW-705	<i>Planetary Impact Processes</i> (10/1/84-9/30/96) PI - Schultz
NASA-NASW-855	<i>Northeast Planetary Data Center</i> (11/1/84-10/31/96) PI – Schultz
NASA-NGT-50325	<i>The Characteristics of Impact-Generated Plasma</i> (9/1/89-8/31/91) PI - Schultz (D. Crawford NASA Fellowship)
NASA-NGT-40034	<i>Brown University Space Grant</i> (3/1/91-2/28/97) PI - Schultz
NASA-JPL-958946	<i>Atmospheric Effects on the Cratering Process</i> (12/1/90-10/5/92) PI - Schultz, Magellan Guest Investigator
NSF-EAR-9121347	<i>Terrestrial Low-Angle Impacts</i> (8/1/91-8/1/93) PI - Schultz

NASA-NGT-51058	<i>Modeling the Atmospheric Response to an Advancing Continuous Ejecta Curtain: Implications for Planets with Atmospheres</i> (7/1/93 - 6/30/96) PI - Schultz (O. Barnouin NASA Fellowship)
NASA-NAGW-3431	<i>Geologic Signatures of Atmospheric Effects on Impact Cratering on Venus</i> (3/15/93 - 3/14/95) PI - Schultz
NSF-EAR-9219777	<i>Major Equipment Request for a Subsurface Interface Radar (SIR) System</i> (7/1/93-6/31/94) Co-PI - Schultz
JPL Director's Research and Development Fund Proposal	<i>Impact Flash Spectroscopy</i> (5/15/95-9/30/97) Co-PI - Schultz
Fina Oil Company	<i>The Sierra Madera impact and implications for hydrocarbon exploration strategies</i> (1/1/97-12/31/98)
NASA-NGT5-50166	<i>Effects of High Strain-rate Deformation on Impact Melt Generation</i> (7/1/99 - 6/30/02) PI Schultz (C. van der Bogert NASA Fellowship)
NASA-NAG5-7082	<i>An Ultra-spectrometer (MEMUS) for Planetary Surface Analysis</i> (4/1/98-3/31/02): Planetary Instrument and Development Program PI – Schultz
NASA-NAG5-3877 (previously, NAGW-705)	<i>Planetary Impact Processes</i> (10/1/96-2004) PI - Schultz
NASA-NGT5-90014 (previously, NGT-40034)	<i>Rhode Island Space Grant Consortium</i> (3/1/91-present) PI – Schultz
NSF-EAR-0001047	<i>Late Cenozoic Record of Impact Glasses in the Argentine Pampas</i> (7/1/00 - 6/30/04)

	PI - Schultz
NASA-Z667703	<i>Deep Impact</i> Co-Investigator Participation (1/1/00 - 4/1/06) PI – Schultz
NASA-NAG5-12327	<i>Survival and Synthesis of Organics During Hypervelocity Impacts</i> (7/1/02-6/30/06) PI-Schultz
NASA-NNG04G197G	<i>Northeast Planetary Data Center</i> (1/05/04-1/14/07) PI – Schultz
NASA-NNG04G011H	<i>Thermal Evolution of Impacts from Laboratory Experiments</i> (7/1/04 - 6/30/07) PI Schultz (Carolyn Ernst, NASA GSRP Fellowship)
USRA-03482-07	<i>Cooperative Study on the Impact Flash</i> 9/1/06 -8/31/07
SANDIA/LIVERMORE No. BS8S712	<i>Sandia/Lawrence-Livermore National Laboratories</i> (1/15/10-9/30/10) PI - Schultz
LCROSS-NNA07CN76A	<i>NASA-Ames LCROSS Mission</i> (4/1/07-3/31/10) PI – Schultz
NASA- NNX07AG18G	<i>NASA Discovery Data Analysis Program</i> (\$90K/yr) (2/15/07-2/14/12) PI – Schultz (0.25: 3 summer months)
NASA-EPOXI/DIXI	<i>EPOXI/DIXI</i> (NASA-Discovery Mission) (\$105K) Co-Investigator Participation (10/1/00 – 12/31/12) PI – Schultz (0.35: 3 summer months)
NASA-Stardust/NExT	<i>Stardust/NExT</i> (NASA-Discovery Mission) (\$75K) Co-Investigator Participation (10/1/00 - 9/30/12) PI – Schultz (0.20-AY: 3 summer months)

NASA-NNG05G137G	<i>Planetary Impact Processes</i> (\$166K/yr) (4/15/08-4/14/12) PI – Schultz (0.40: 3 summer months)
NASA-NNX07AP52G	<i>Northeast Planetary Data Center</i> (\$53K/yr) (7/27/07-7/26/12) PI – Schultz (0.10-AY, 0.10: 3 summer months)
NASA-NNX10AI95H S05	<i>Rhode Island Space Grant Consortium</i> (4/23/10-4/22/15) PI – Schultz (0.15-AY NASA; 0.15-AY Brown; 0.10: 3 summer)
NASA-NNXIOANO3A	<i>NASA-RI EPSCoR Research Award</i> (\$725K) (7/02/10-7/01/13) PI – Schultz; Science PI – B. Lucht (URI) (0.05AY; 0.0 summer months)
NASA-NNX11AR21A	<i>NASA-EPSCOR RID</i> (Research Infrastructure and Development Award), (\$325K total with augmentation) (9/1/11-8/31/13) PI – Schultz (0.05 AY Brown; 0.0 summer months)
NASA-NNX12AL7	<i>NASA Fellowship Award</i> (Megan Bruck Syal) 09 /07 /2013 through 8/ 31/ 2014 PI – Schultz (0.0 AY Brown; 0.0 summer months)
NASA-NNX13AB75G	<i>Planetary Impact Processes</i> <i>Planetary Geology and Geophysics</i> (\$112K/yr) (10/24/12-10/23/15) PI – Schultz (0.10 CY)
NASA-NNX13AG43G	<i>Impact-Blast Winds on Mars</i> Mars Fundamental Research Program (\$82.4K/yr) 2/07/13 - 2/06/16 PI – Schultz (0.08 CY)
NASA-NNX12AP67G	<i>NASA Ames Vertical Gun Range Facility</i>

	Planetary Geology and Geophysics 10/1/12-9/30/17 PI – Schultz (0.05 CY)
NASA-NNX12AQ03G	<i>Northeast Planetary Data Center</i> Planetary Geology and Geophysics (8/22/12-8/21/17) PI – Schultz (0.15 CY)
NASA-NNX15AI06H	<i>Rhode Island Space Grant Consortium</i> (5/01/15-4/30/18) PI – Schultz (0.20 CY)
NASA-NNX13AB24A	<i>NASA-EPSCOR RID</i> Research Infrastructure and Development Award <i>NASA-EPSCOR</i> (10/18/12-10/17/15) PI – Schultz (0.10 CY)
NASA- NNX13AN07A	<i>Web-Scale Assisted Robot Tele-operation</i> Competitive Research Award <i>NASA-EPSCOR</i> (9/1/13-8/31/16) PI – Schultz (0.10 CY) Science PI – Iris Bahar (Brown)
NASA-NNX16AR01A	<i>Testing New Methods to Assess the Environmental and Floral/Faunal responses to Impacts on Earth</i> Competitive Research Award PI - Schultz (0.10 CY) Science-PI – C. Heil (GSO/URI)

**9. TEACHING** (NB: Prior to 2006, Research grants typically covered 33-50% of teaching load during the Academic Year (AY); from 2005 to 2008, grants covered 20 to 25% AY teaching). Starting in 2008, AY obligations increased to 40%; currently it is 55% (not including NLSI Grant). Departmental teaching load is 2.5/year to 3/year for faculty without a research program and 2.0 courses/year for faculty actively involved in research.

**1996-1997:**

*Fall*  
4 Graduate Students

*Spring*  
4 Graduate Students

Guest Lecturer (GE-22)

Planetary Geology (GE-81; 100%;  
26 students)  
Also contributed to Seminar in Biology  
on "Evolution of Life

**1997-1998:**

***Fall***

(on sabbatical)  
4 Graduate Students  
Guest lecturer in GE-22, GE-31

***Spring***

(on sabbatical)  
4 Graduate Students  
Guest lecturer, Archeology (AN-252)  
Also participated in GSO Lecture Series on  
"Life in Extreme Environments"

**1998-1999:**

***Fall***

3 Graduate Students  
Guest lecturer in GE-22, GE-31  
Planetary Cratering (GE-288; 100%  
9 students)

***Spring***

Planetary Geology (G-81; 100%;  
32 students)  
3 Graduate Students

**1999-2000:**

***Fall***

Terrestrial Impact Record (GE-281;  
(100%; 6 students)  
Guest lecturer, GE-22  
3 Graduate Students  
Physics Senior Thesis Advisor (Erin Weeks)

***Spring***

Planetary Geology (GE-81; 100%  
25 students)  
3 Graduate Students  
Undergraduate Thesis Advisor

**2000-2001:**

***Fall***

Planetary Impact Cratering (GE-288; 100%)  
6 students  
3 Graduate Students  
Guest lecturer GE-22  
Physics Senior Thesis Advisor (Carolyn Ernst)  
Geology Senior Thesis Advisor (D. Paduano)

***Spring***

Planetary Geology (GE-81; 100%  
20 students)  
3 Graduate Students  
Undergraduate Thesis Advisor (2)

**2001-2002:**

***Fall***

6 Graduate Students  
Guest Lecturer GE-22  
Geology Undergraduate Thesis Advisor (2)

***Spring***

Planetary Geology (GE-81; 100%)  
6 Graduate Students  
Undergraduate Thesis Advisor (2)  
Guest Lecturer, Advisor, and Critical  
Reviewer for Industrial Design Course  
(Rhode Island School of Design)



**2002-2003:**

***Fall-2002***

7 Graduate students  
Guest Lecturer GE 22  
Planetary Impact Cratering  
(GE 288; 100%)

***Spring-2003***

Planetary Geology (GE-81; 100%)  
7 Graduate students  
Undergraduate Independent Study Advisor  
Guest Lecturer, Advisor, and Critical  
Reviewer for Industrial Design  
Course (Rhode Island School of Design  
Design)  
Guest Lecturer (University of Rhode Island)  
Guest Lecturer (WHOI)  
Guest Lecturer (Northwestern)

**2003-2004:**

***Fall***

8 graduate students

***Spring-2004***

Planetary Geology (GE 81, 100%)  
8 graduate students  
Undergraduate Senior Thesis (N. Reul)  
Guest Advisor and Critical  
Reviewer for Industrial Design  
Course (Rhode Island School of  
Design)

**2004-2005: *Sabbatical Fall and Spring***

***Fall-2004 (sabbatical)***

6 graduate students

***Spring-2005 (sabbatical)***

6 graduate students  
Senior thesis advisor: Tyler Wilson  
(Chemistry)  
Guest lecture Bio-19

**2005-2006**

***On leave, fall 2005 (NASA Deep Impact Encounter)***

Senior Honors Thesis advisor: Lauren Brodsky  
Senior Thesis advisor: Julie Kosominsky  
Senior Honors Thesis Advisor (external): Evan Ackerman (Bates College)  
Faculty Advisor: Engineering 176 (Capstone Senior Design Project) and  
Independent Study

***Spring-2006***

Planetary Geology (GE 81, 100%)  
6 graduate students

Guest Advisor and Critical  
Reviewer for Industrial Design

Course (Rhode Island School of Design)

**2006-2007:**

***Fall-2006***

Planetary Cratering (8 students)  
GE 0288 (100%)

6 graduate students  
Freshman Advisor

***Spring-2007***

“Planetary Geology” (19 students)  
GE 0810 (100%)

Guest Speaker, Advisor and  
Critical Reviewer for  
Industrial Course (*Rhode Island School of  
Design*)  
External Faculty Advisor:  
*Engineering 176* (Capstone  
Senior Design Project)  
Senior Thesis Advisor: Daniel Finn-  
Foley (*Physics*)

**2007-2008:**

***Fall-2007***

Freshman Seminar (18 students)  
*Chicken Little: Past and Future*  
*Cosmic Threats*, GE 0160 (100%)

Freshman Advisor  
Sophomore Advisor  
7 graduate students

***Spring-2008***

“Planetary Geology” (10 students)  
GE 0810 (100%)

**2008-2009:** 40% obligation through grants (teaching 100% for 2 courses)

***Fall-2008***

Planetary Cratering (10 students)  
GE 0288 (100%)

Freshman Advisor  
Sophomore Advisor  
5 graduate students

***Spring-2009***

“Planetary Geology” (9 students)  
GE 0810 (100%)

**2009-2010:** 40% obligation through grants and formal university commitments to grants  
(teaching 100% for 2 courses)

***Fall-2009***

Freshman Seminar (23 students)  
*Chicken Little: Past and Future*  
*Cosmic Threats*, GE 0160 (100%)

Freshman Advisor  
Sophomore Advisor  
5 graduate students

***Spring-2010***

“Planetary Geology” (9 students)  
GE 0810 (100%)

**2010-2011:** Grants (and formal university commitments of my time to grants) cover 40% AY time. Due to two NASA mission encounters during the academic year, the Departmental Chair relieved teaching requirement for the Spring Semester, 2011.

***Fall-2010***

*Planetary Cratering* (7 students)  
GE 0288 (100%)

***Spring-2011***

Geo Honors Thesis Advisor (Dara Goldberg)

Sophomore Advisor  
6 graduate students

**2011-2012:** Grants (and formal university commitments of my time to grants) amount to 50% AY time.

***Fall-2011***

Freshman Seminar (18 students)  
*Chicken Little: Past and Future*  
*Cosmic Threats*, GE 0160 (100%)

***Spring-2012***

“Planetary Geology”

Freshman Advisor  
Sophomore Advisor  
6 graduate students

**2012:** Grants (and formal university commitments of my time to grants) amount to 50% AY time. Began Sabbatical in fall 2012

***Fall-2012***

SABBATICAL

5 graduate students

**2013:** Sabbatical spring of 2013. Returned to teaching in the fall.

***Fall-2013***

*Planetary Cratering* (12 students)

GE 2880 (100%)

**2014:** *Formally transitioned to Professor Research January 1, 2014*

**GRADUATE THESES SUPERVISED:**

- M.S.** Patricia Grizzaffi (1987)  
Robert Wichman (1989)  
David Crawford (1989)  
Charles Halfen (1991)  
Olivier Barnouin-Jha (1992); also received MS Engineering (2011).  
Jason Dahl (1999)  
Carolyn van der Bogert (1999)  
Jennifer Anderson (2001)  
Carolyn Ernst (2003)  
Kelly Wrobel (2003)  
Clara Eberhardy (2004)  
Brendan Hermalyn (2009); also received MS Engineering (2011).  
Angela Stickle (2009); also received MS Engineering (2011).  
Megan Bruck (2011)  
Stephanie Quintana (2013)  
R. Terik Daly (2014)
- Ph.D.** John Grant (1990): "Erosional Evolution of Impact Craters on the Earth and Mars"  
David Crawford (1992): "The Production and Evolution of Plasma and Associated Magnetic Fields During Hypervelocity Impacts: Implications for Planetary Paleomagnetism"  
Robert Wichman (1993): "Post-impact Modification of Craters and Multiring Basins on the Earth and Moon by Volcanism and Crustal Failure"  
Olivier Barnouin (1998): "Modeling atmospheric entrainment and transport of Impact ejecta."  
Seiji Sugita (1998): "Generation and Evolution of impact-generated vapor clouds: Spectroscopic observations and hydrodynamic calculations"  
Jennifer L. B. Anderson (2004): "Experimental studies of ejecta dynamics during vertical and oblique impacts"  
Carolyn van der Bogert (2004): "High strain-rate Deformation as an Impact Process: Ordinary Chondrite and Carbonate-silicate Frictional Melting Experiments and Their Comparison with Naturally Deformed materials"  
Bradley Thomson (2006): "Recognizing Impact Glass on Mars using Surface Texture, Mechanical Properties, and Mid-Infrared Spectroscopic Methods."

Kelly Wrobel (defended July, 2007): “Computational modeling of impact-generated vapor and melt: Implications for remnant impact products on Mars and Earth”

Carolyn Ernst (defended, 2008): “Photometric, thermal, and spatial resolution of the impact flash.”

Brendan Hermalyn (2011): “Ejecta Evolution and Dynamics from Hypervelocity Impacts: Time-Resolved Experimental Studies and Applications to Planetary Cratering.”

Angela Stickle (2012): “Epic Failure: A Study of Subsurface Damage Following Oblique Hypervelocity Impacts”

Megan Bruck Syal (2014): “Impact Vaporization: Experimental and Numerical Insights”

Jason Dahl (2016): “Shock Asymmetries from Oblique Hypervelocity Impacts”

Stephanie Quintana (2017): “The impact Winds of Mars”

R. Terik Daly (2017): Preserving Projectiles During Impacts on Asteroids and Planets”

*External PhD. Committee Member*, Robert Herrick, 1992 (SMU, Dallas); G. R. Osinski, 2004 (University of New Brunswick, Fredericton, NB)

*External PhD. Committee Member*, James Hogan, 2013 (University of New Brunswick, Fredericton, NB)

*Internal PhD. Dissertation Defense Committee*: S. Murchie, J. Sunshine, M. Staid, L. Lee, C. Cooper, Noah Petro, Noah Hammond, Kevin Cannon

## ALL PAPERS, BOOKS, ABSTRACTS (P. H. SCHULTZ)

### ***Books (authored and edited)***

- 1976 Schultz, P. H., *Moon Morphology*, University of Texas Press, Austin Texas, 604 pp.
- 1977 R. Greeley, R. and Schultz, P. H. (eds), *A Primer in Lunar Geology*, NASA Technical Memorandum
- 1980 Schultz P.H. and Merrill R.B. (eds.), *Multi-ring Basins*, Proc. Lunar and Planetary Sci. 12A
- 1981 Silver, L. and Schultz, P. H. (eds.), *Geological Implications of Impacts by Asteroids and Comets on the Earth*, Geol. Soc. Amer. Special Paper 190 .

### ***Peer-Reviewed Papers*** (“P” indicates peer-reviewed journal article): 165 papers

- 1973.P Schultz P.H. and Ingerson F.E. Martian lineaments from Mariner 6 and 7 images, *J. Geophys. Res.*, 78, pp. 8415-8427.
- 1974.P Schultz P.H. A review of lunar surface features. In *A Primer in Lunar Geology*, R. Greeley and P. H. Schultz, eds. NASA-TM 62,359, p. 574.
- 1975.P. Schultz P.H. and Gault D.E. Seismically induced modification of lunar surface features. In *Proc. Lunar Sci. Conf. 6th*, pp. 2845-2862.

- 1975.P Schultz P.H. and Gault D.E. Seismic effects from major basin formation on the Moon and Mercury. *The Moon*, 12, pp. 159-177.
- 1976.P Schultz P.H., Greeley R. and Gault D.E. Degradation of small mare surface features. In *Proc. Lunar Sci. Conf. 7th*, pp. 985-1003.
- 1976.P Schultz P.H. Floor-fractured lunar craters. *The Moon*, 15, pp. 241-273.
- 1977.P Schultz P.H. Endogenic modification of impact craters on Mercury. In *Physics of the Earth and Planetary Interiors*, 15, pp. 202-219.
- 1977.P Simonds C., Schultz P.H. and Solomon S. Comparison of Mercury and the Moon: A Conference. *EOS* 59, pp. 43-48.
- 1977.P Schultz P.H., Greeley R. and Gault D.E., Interpreting statistics of small lunar craters. *Proc. Lunar Sci. Conf. 8th*, pp. 3539-3564.
- 1978.P Schultz P.H. Martian intrusions: Possible sites and implications. *Geophys. Res. Lett.* 5, pp. 457-460.
- 1978.P Schultz P.H. and Mendell W., Orbital infrared observations of lunar craters and possible implications for impact ejecta emplacement. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2857-2883.
- 1978.P Orphal D.L. and Schultz P.H. An alternative model for the Manicouagan impact structure. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2695-2712.
- 1979.P Schultz P.H. and Gault D.E. Atmospheric effects on Martian ejecta emplacement. *J. Geophys. Res.* 84, pp. 7669-7687.
- 1979.P Schultz P.H. and Spudis P.D. Evidence for ancient lunar basalts. *Proc. Lunar and Planetary Sci. Conf. X*, pp. 2899-2918.
- 1979.P Thomsen J.M., Austin M.G., Ruhl S.F., Schultz P.H. and Orphal D.L. Investigation of the mechanics of impact cratering. *Proc. Lunar and Planetary Sci. Conf. X*, pp. 2741-2756.
- 1979.P Pai S.I., Menon S. and Schultz P.H. Effects of lift force on ejecta transport. *Proc. Lunar and Planetary Sci. Conf. X*, pp. 2779-2797.
- 1979.P Schultz P.H. and Glicken H. Impact crater and basin control of igneous processes on Mars. *J. Geophys. Res.*, 84, pp. 8033-8047.
- 1980.P Schultz P.H. and Srnka L.J. Cometary collisions on the Moon and Mercury. *Nature* 284, pp. 22-26.
- 1980.P Schultz P.H. and Singer J. Secondary impact craters around lunar, Mercurian, and Martian craters. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2243-2259.
- 1980.P Orphal D.L., Borden W.F., Larson S.A. and Schultz P.H. Impact melt generation and transport. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2309-2323.
- 1980.P Austin M.G., Thomsen J.M., Ruhl S.F., Schultz P.H. and Orphal D.L. Calculational investigation of impact cratering dynamics: material motions during the crater growth period. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2325- 2345.
- 1980.P Greeley R., Fink J., Gault D.E., Guest J. and Schultz P.H. Impact cratering in viscous targets: Laboratory experiments. *Proc. Lunar and Planetary Sci. Conf. IX*, pp. 2075-2097.
- 1981.P Schultz P.H. The impact of impacts explored. *Geotimes* 26, pp. 25-26.
- 1981.P Schultz P.H., Orphal D.L., Miller B., Borden W.F. and Larson S.A. Multi-ring basin formation: Possible clues from impact cratering calculations. In *Multi-ring Basins, Proc. Lunar and Planetary Sci. 12A*, Schultz P.H. and Merrill R.B. (eds.), pp. 181-195.
- 1981.P Austin M.G., Thomsen J.M., Ruhl S.F., Orphal D.L., Borden W.F., Larson S.A. and

- Schultz P.H. Z-Model analysis of impact cratering: An overview. In *Multi-ring Basins, Proc. Lunar and Planetary Sci. 12A*, Schultz P.H. and Merrill R.B. (eds.), pp. 197-205.
- 1981.P Thompson T.W., Zisk S.H., Shorthill R.W., Schultz P.H. and Cutts J.A. Lunar craters with radar bright ejecta. *Icarus* 46, pp. 201-225.
- 1981.P Head J.W., Bryan W.B., Greeley R., Guest J., Schultz P.H., Sparks, R.J.J., Walker G.P.L., Whitford-Stark J.L., Wood C.A. and Carr M.H. Distribution and morphology of basalt deposits on planets. In *Basaltic Volcanism on the Terrestrial Planets*, Basaltic Volcanism Study Project, pp. 701-800, Pergamon Press, N.Y., p. 1286.
- 1981.P Schultz P.H. From Arago to Apollo: The evolution of space photography. In *The Proceedings of the First Western Photohistory Symposium* (W.B. Carroll, ed.), pp. 17- The Western Photographic Collectors Association: Whittier, CA, p. 69.
- 1982.P Schultz P.H., Schultz R.A. and Rogers J.L. Structure and evolution of ancient impact basins on Mars. *J. Geophys. Res.* 87, pp. 9803-9820.
- 1982.P Schultz P.H. and Lutz-Garihan A.B. Grazing impacts on Mars: A record of lost satellites. *J. Geophys. Res.*, 87 Supplement, pp. A84-A96.
- 1982.P Schultz P.H. and Gault D.E. Impact ejecta dynamics in an atmosphere: Experimental results and extrapolations. In *Geol. Soc. Amer. Special Paper 190* (L.T. Silver and P.H. Schultz, eds.), pp. 153-174.
- 1983.P Schultz P.H. and Spudis P.D. Beginning and end of lunar mare volcanism. *Nature* 302, pp. 233-236.
- 1983.P Eppler D.T., Ehrlich R., Nummedal D. and Schultz P.H. Sources of shape variation in lunar impact craters - Fourier shape analysis. *Bull. Geol. Soc. Amer.*, 94, pp. 274-291.
- 1983.P Arvidson R.A., Levinthal E., Saunders R.S. and Schultz P.H. Remote sensing of the surfaces of terrestrial moons and planets. In *Manual of Remote Sensing*, Vol. II, second edition, pp. 2385-2415.
- 1984.P Matsui T. and Schultz P.H. On the brittle-ductile behavior of iron meteorites: New experimental constraints. *J. Geophys. Res.* 89, C323-C328.
- 1985.P Schultz P.H. and Gault D.E. Clustered impacts: Experiments and implications. *J. Geophys. Res.* 90, pp. 3701-3732.
- 1985.P Chicarro A.F., Schultz P.H. and Masson P. Global and regional ridge patterns on Mars. *Icarus* 63, pp. 153-174.
- 1985.P Schultz P.H. Polar wandering of Mars. *Scientific American* 253, pp. 94-102.
- 1987.P Schultz P.H. Experimental planetary impact research (invited review paper). In *International Journal of Impact Engineering*, 5, pp. 569-576.
- 1987.P Schultz P.H. Impact cratering and the ancient Martian climate. *Kagaku* 57, No. 8, pp. 486-495.
- 1987.P Grant J. and Schultz P.H. Possible tornado-like tracks on Mars. *Science* 237, pp. 883-885.
- 1987.P Schultz P.H. Polar wandering on Mars: Evidence and Implications. *Astron. Vestnik* 21.
- 1988.P Schultz P.H. and Lutz A.B. Polar wandering on Mars. *Icarus* 73, pp. 91-141.
1988. P Crawford D.A. and Schultz P.H. Electromagnetic emissions from oblique hypervelocity impacts. *Nature* 336, 50-52.
1988. P Schultz P.H. Impact cratering on Mercury: A relook. In *Mercury* (F. Vilas, C.R. Chapman, M.S. Mathews, eds.), U. Arizona Press, Tucson, 274-335.
- 1989.P Grizzaffi P.A. and Schultz P.H. Isidis Basin: Site of volatile-rich debris layer. *Icarus* 77, 358-381.

- 1989.P Grant J. and Schultz P.H. Gradation on Mars: From west and northwest of Isidis basin and the Electris region. *Icarus* 84, 166-195.
- 1989.P Wichman R.W. and Schultz P.H. Sequence and mechanisms of deformation around the Hellas and Isidis impact basins on Mars. *J. Geophys. Res.* 94, 17333-17357.
- 1990.P Schultz, P.H. and Gault, D.E. Prolonged global catastrophes from oblique impacts. In V.L. Sharpton and P.D. Ward, eds., *Global Catastrophes in Earth History: An Interdisciplinary Conference on Impacts, Volcanism, and Mass Mortality*, Geological Society of America Special Paper 247, 239-261.
- 1990 P Grant, J.A. and Schultz, P.H. Gradational epochs on Mars: Evidence from west-northwest of Isidis Basin and Electris. *Icarus*, 84, pp. 166-195.
- 1991.P Bunch, T.E., Schultz, P.H., Cassen, P., Brownlee, D., Podolak, J., Lissauer, J., Reynolds, R., and Chang, S. Alteration of chondrules on impact with low density particulate body surfaces: An experimental approach. *Icarus*, 91, 76-92.
- 1991.P Crawford, D.A. and Schultz, P.H. Laboratory investigations of impact-generated plasma. *J. Geophys. Res.*, 96, No. E3, pp. 18,807-18, 817.
- 1992.P Schultz, P.H. Atmospheric effects on ejecta emplacement and crater formation on Venus from Magellan. *J. Geophys. Res.*, 97, No. E10, 16,183-16,248.
- 1992.P Schultz, P.H. Atmospheric effects on ejecta emplacement. *J. Geophys. Res.*, 97, E7, 11,623-11,662.
- 1992.P Schultz, P.H. Atmospheric effects on cratering efficiency. *J. Geophys. Res.*, 97, E1, 975-1005.
- 1992.P Schultz, P.H. and Lianza, R. Recent grazing impacts on the Earth recorded in the Rio Cuarto crater field, Argentina. *Nature*, 355, 234-237.
- 1993.P Wichman, R.W. and Schultz, P.H. Floor-fractured crater models of the Sudbury structure, Canada: Implications for initial crater size and crater modification, *Meteoritics* 28, 222-231.
- 1992.P Schultz, P.H. and Beatty, J.K. Teardrops on the pampas, *Sky and Telescope*, 83, 387-392.
- 1993 P. Grant, J.A. and Schultz, P.H. Erosion of ejecta at Meteor Crater, Arizona, *J. Geophys. Res.*, 98, 15,033-15,047.
- 1993.P Grant, J.A. and Schultz, P.H. Degradation of selected terrestrial and Martian impact craters. *J. Geophys. Res.*, 98, E6, 11,025-11,042.
- 1993.P Schultz, P.H. Impact crater growth in an atmosphere. *International J Impact Eng.*, 114, 659-670.
- 1993.P Crawford, D.A. and Schultz, P.H. The production and evolution of impact-generated magnetic fields, *International J. Impact Eng.*, 14, 205-216.
- 1994.P Wichman, R.W. and Schultz, P.H. The Crisium Basin: Implications of an oblique impact for lithospheric failure and mare emplacement. *Large Meteorite Impacts and Planetary Evolution* (B.O. Dressler, R.A.F. Grieve, and V.L. Sharpton, eds.). *Geol. Soc. Special Paper* 293, 61-72.
1994. P Grant, J.A., and Schultz, P.H. (1994), Erosion of ejecta at Meteor Crater: Constraints from ground penetrating radar: p. 789-803, in GPR '94, *Proceedings of the Fifth International Conference on Ground Penetrating Radar*, June 12-16, 1994, University of Waterloo, Kitchener, Ontario, Canada.
- 1994.P Schultz, P.H., Koeberl, C., Bunch, T.E., Grant, J.A., and Collins, W. Ground truth for oblique impact processes: New insight from the Rio Cuarto, Argentina, crater field. *Geology*, 22, 889-892.



- 1995 P Wichman, R.W. and Schultz, P.H. Floor-fractured impact craters on Venus: Implications for igneous crater modification and local magmatism, *J. Geophys. Res.*, *100*, No. E2, 3233-3244.
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