

ANGELA K. SPECK

PERSONAL INFORMATION:

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	http://stardust.missouri.edu/		

PROFESSIONAL PREPARATION:

Leadership:

Higher Education Resource Services Summer Institute	Summer 2013
Denver, CO.	

Postdoctoral:

Astronomy Department, University of Illinois at Urbana-Champaign	1999-2002
Department of Physics & Astronomy, University College London	1998-1999

Graduate:

University College London, London, UK	1995-1998
Ph.D., Astronomy, 1998	

Undergraduate:

Queen Mary, University of London, London, UK.	1989-1992
B. Sc. (with Honours), Astrophysics, 1992	

POSITIONS HELD:

Faculty Fellow in the MU Grad. School	<u>University of Missouri – Columbia</u>	2013-present
MU-CIRTL Leader		2011-present
(Full) Professor of Astrophysics		2011-present
Director of Astronomy		2009-present
Associate Professor of Astrophysics		2008-2011
Assistant Professor of Astrophysics		2004-2008
Visiting Assistant Professor		2002-2004
Adjunct Professor of Geology		2007-present
R& D Technician	Mountain Breeze	1993

GRANTS AND AWARDS

PENDING

HHMI Professor: \$1,000,000, "Stardust: the Play-Doh of the Universe OR I Am Stardust and So Can You", PI: Angela Speck (09/01/2014 – 08/31/2019)

NSF IIA (EPSCoR): \$749,848, "Building and Researching Inclusively Designed (Geo)science Education (BRIDGE)", PI: Marcelle Siegel; co-PI: Angela Speck (06/01/2014 – 05/30/2019)

AWARDED:

William T. Kemper Award for Excellence in Teaching: \$10,000 (2013)

NSF DUE: \$155,000*; "The CIRTL[†] Network: 25 Research Universities Preparing a National Faculty to Advance STEM Undergraduate Learning", NSF Proposal #7206121, Co-PI: Angela Speck (01/01/2013 – 12/31/2017), *MU/Co-PI Speck's budget; total budget is ~\$5M for 23 institutions.

[†]Centers for the Integration of Research, Teaching and Learning, see www.cirtl.net.

University of Missouri Research Board: \$7,600; "Computational studies of factors effecting the infrared spectra of minerals", PI: Angela Speck (09/01/2011 – 08/31/2012)

NSF AST: \$39,553*; "Collaborative Research: A laboratory experimental study of astronomical dust analogs at ultraviolet-visible wavelengths", PI: Karly Pitman (10/01/10 – 09/30/13) *Co-I Speck funding.

Beatrice M. Tinsley Visiting Scholar (ISM Group), University of Texas at Austin, February 2010.

Big XII Faculty Fellowship: \$2900 to start new collaborations at University of Oklahoma and University of Texas at Austin, academic year 2009-2010.

MU Department of Physics & Astronomy, Alumni Faculty Fellowship 2009.

Marsico Visiting Scholar, University of Denver, May 2009.

NSF AST: \$280,630; *“Collaborative Research: An integrated experimental and observational study of cosmic silicate astromineralogy”*, PI: Angela Speck (09/15/09 – 08/31/13).

NSF CCLI: \$149,832 *“VLE-STAR: Virtual Learning Environment for Scientific Thinking in Astronomy”*, PI: Angela Speck (07/27/2009 – 05/19/2010)

NSF REU Supplement: \$21,315.00; *“CAREER: A multi-faceted investigation of the astromineralogy and evolution of dust around low- and intermediate mass evolved stars”*, PI: Angela Speck (05/01/2009 – 04/30/2010).

MU Provost's Outstanding Junior Faculty Research and Creative Activity Award, \$1000, 2008.

AAS travel grant to attend the “Cosmic Dust – Near & Far” conference in Heidelberg, Germany, \$3500, September 2008

Spitzer Space Telescope: \$11,525* (and time); *“Excavating the Mass Loss History in the Circumstellar Dust Shells of Evolved Stars (Spitzer-MLHES)”*, PI: Toshiya Ueta. (08/01/07 – 05/31/10) *Co-I Speck funding.

Spitzer Space Telescope: \$8,500* (and time); *“SAGE-Spectroscopy: The life cycle of dust and gas in the Large Magellanic Cloud”*, PI: Alexander Tielens. (08/01/07 – 05/31/10) *Co-I Speck funding.

Spitzer Space Telescope: \$5000* (and time); *“The circumstellar - interstellar interface revealed”*, PI: Robert Stencel. (08/01/07 – 05/31/10) *Co-I Speck funding.

NSF CAREER: \$488,558; *“CAREER: A multi-faceted investigation of the astromineralogy and evolution of dust around low- and intermediate mass evolved stars”*, PI: Angela Speck (05/15/07 – 04/30/13)

NSF AST: \$196,702; *“Collaborative Research: Dust formation around carbon stars: astromineralogy and the condensation sequence”*, PI: Angela Speck (07/15/06 – 06/30/09)

Spitzer Space Telescope: \$11,020* (and time); *“The Dust Condensation Sequence at Low Metallicity: AGB Stars in NGC 6822”*, PI: Schuyler Van Dyk. (02/01/06 – 05/31/08) *Co-I Speck funding.

Spitzer Space Telescope: \$51,885 (and time); *“MIPS Infrared Imaging of AGB Dustshells (MIRIAD): tracing mass-loss history in the extremely large shells around evolved stars”*, PI: Angela Speck, (08/10/05 – 05/31/08) *Co-PI Speck's funding.

University of Missouri Research Board: \$30,945; *“Astromineralogy: dust around evolved stars in the Magellanic Clouds”*, PI: Angela Speck (09/01/2005 – 08/31/2006)

MU Research Council/Summer Research Fellowship: \$7,500(RC), \$3500 (SRF); *“Evolution of Molecular Gas and the Origin of Cometary Knots in Planetary Nebulae”*, PI: Angela Speck, (07/01/05 – 06/30/06)

Hubble Space Telescope: \$32,997; *“Evolution of molecular gas and the origin of cometary knots in planetary nebulae”*, PI: Angela Speck (07/01/05 – 06/30/07).

NASA: \$44,570*; *“Distinguishing Grain-Size and Temperature Effects on the Infrared Fingerprints of Astrominerals: A Quantitative Laboratory Approach”*, PI: Anne Hofmeister (Washington University), Co-PI: Angela Speck (02/01/2005 – 01/31/2008) *Co-PI Speck's funding.

NASA Astrophysics Data Program: \$105,000; *“Astromineralogy: dust around evolved stars in the Magellanic Clouds”*, PI: Angela Speck (03/01/2003 – 02/28/2005)

NASA Astrophysics Data Program: \$95,000; *“Extremely extended dust shells around evolved stars: mass-loss histories, thermal pulses and stellar evolution”*, PI: Angela Speck (02/01/2002 – 01/31/2004)

MU Faculty International Travel Award \$1500 to attend “Why Galaxies Care About AGB Stars” conference in Vienna, Austria, Aug 2006.

AAS travel grant to attend the “Workshop on Pulsating Mass-losing Stars” workshop, Sendai, Japan, May 2002

AAS travel grant to attend the “Origin and Evolution of Interstellar Silicates” workshop, Leiden, The Netherlands, 2001.

Royal Society grant to attend the “IAU Symposium 197 – Astrochemistry” in Cheju Island, South Korea, Aug 1999.

IAU grant to attend “IAU Symposium 197 – Astrochemistry” in Cheju Island, South Korea, Aug 1999.

IAU grant to attend “IAU Symposium 191 - AGB Stars” in Montpellier, France, Aug 1998.

Winner of the Royal Society of Chemistry, Skinner Poster Prize – 1998

Washington University (St Louis) grant to attend “Astrophysical Implications of the Lab Study of Presolar Grains” conference in St Louis, Oct 1996.

INVITED TALKS:

Conferences:

- Science Teachers of Missouri (STOM-MEEA) Fall Conference, October 7 – 8 2011, Keynote speaker “Pluto: It’s demise and resurrection”.
- AAS 218th Meeting, May 22 - 26 2011, Boston, MA, in Session 114: AAVSO: Variable Stars in the Imaging Era “Variable Stars and The Asymptotic Giant Branch: Stellar Pulsations, Dust Production and Mass”
- Resolving the Future of Astronomy with Long-Baseline Interferometry, March 28 – 31 2011, Socorro, NM. “Evolved Stars, pulsation and mass loss – understanding the link between variability and evolution of intermediate mass stars”
- Meteoritical Society Pre-meeting Workshop on Disks, Meteorites, Planetessimals, July 23 – 24 2010, New York, NY. “Dust from Evolved Stars to Protostars”
- SELAC (Southeast Laboratory Astrophysics Conference), March 30 – April 1 2010, Athens, GA. “Through The Looking Glass: A Re-analysis of Silicate Dust Spectral Features”
- Towards Understanding Planetary Nebulae: Strategic Research Collaborations, June 17 – 19, 2009, Rochester, NY. “Rethinking Stardust Formation - observational challenges to the conventional wisdom”
- AAS 214th Meeting, June 7 - 11 2009, Pasadena, CA, in Session 232: Bridging Laboratory and Astrophysics: The Dusty Universe - From Spitzer to Herschel “The Dusty Universe - From Spitzer to Herschel: Dust Formation and Spectroscopy”
- IAU Symposium 251: Organic Matter in Space, February 18-22, 2008, Hong Kong, China.
- Astronomy with Radioactivities V: From Gamma Rays to Stardust, September 5-9, 2005: Clemson University, SC, “Effects of Stellar Evolution on the Nature of SiC Grains in Outflows of C Stars”
- AAS 206th Meeting, May 29 - June 2, 2005, Minneapolis, MN, in Session 28: Formation and Fate of Stardust “Mineralogy of Dust in the Outflows of Asymptotic Giant Branch Stars”
- Mid-America Regional Astrophysics Conference, April 15-16, 2005, UMKC, Kansas City, MO, “The Nature of Stardust: Circumstellar Shells Around Evolved Stars”
- Workshop on Cometary Dust in Astrophysics, August 10-15, 2003, Crystal Mountain, Washington “Observational Evidence for Presolar Grains Around Oxygen-rich Evolved Stars”.
- Asymmetrical Planetary Nebulae III: Winds, Structure and the Thunderbird, July 28 - August 1, 2003, Mt. Rainier, Washington, “Episodic Mass Loss on the Timescale of Thermal Pulses: Radiative Transfer Modeling of the Egg Nebula”.
- Workshop on Interstellar Silicates, April 17 – 20, 2001, Lorentz Center, University of Leiden, The Netherlands, “Circumstellar dust around oxygen-rich evolved stars”.

Colloquia:

- Kansas State University, February 2011, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- SOFIA (Stratospheric Observatory For Infrared Astronomy), November 2010, “Through the Looking Glass: A Re-Analysis of Silicate Dust Spectral Features”
- Columbia University, April 2010, “Through The Looking Glass: A Re-analysis of Silicate Dust Spectral Features”
- University of Texas at Austin, February 2010, “Through The Looking Glass: A Re-analysis of Silicate Dust Spectral Features”
- University of Toledo, February 2010, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- University of Missouri at Kansas City, December 2009, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- University of Oklahoma, September 2009, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- University of Maryland, April 2009, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- Louisiana State University, April 2009, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- University of Denver, May 2009, “Cosmochemistry & Astromineralogy: from the Big Bang to Life”
- NASA Goddard Space Flight Center, ASD Colloquium, May 2008 “Understanding the conditions for crystalline silicate formation: Lessons from an obscured AGB star”
- Northern Arizona University, April 2008, “The Nature of Stardust: Circumstellar Shells Around Evolved Stars”
- University of Texas at Austin, September 2007, “The Nature of Stardust: Circumstellar Shells Around Evolved Stars”
- University of Missouri, Geological Sciences, February 2007 “The Nature of Stardust: Astromineralogy and the Dust Around Aging Stars”
- Kansas University, May 2005, “Stardust: Observational Evidence of Mass-loss Processes During the Late Stages of Stellar Evolution”
- Truman State University, April 2005, “Stardust: Observational Evidence of Mass-loss Processes During the Late Stages of Stellar Evolution”
- University of Missouri at Kansas City, November 2003 “Stardust: Observational Evidence of Mass-loss Processes During the Late Stages of Stellar Evolution”
- University of Missouri at St Louis, November 2003 “Stardust: Observational Evidence of Mass-loss Processes During the Late Stages of Stellar Evolution”
- University of Minnesota Feb 2003 “Large-Scale Extended Emission Around the Helix Nebula”
- University of Iowa, April 2002 “The Life Cycle of Dust: Birth around Evolved Stars”
- Northern Arizona University, March 2002 “The Life Cycle of Dust: Birth around Evolved Stars”
- University of Wisconsin – Madison, February 2002 “The Life Cycle of Dust: Birth around Evolved Stars”
- University of Wyoming, January 2002 “The Life Cycle of Dust: Birth around Evolved Stars”
- University of Kentucky, 2001 “Mass-loss from AGB stars”
- University of Illinois Urbana-Champaign, 1999, “Astromineralogy”

Public talks:

- Organizer, host and speaker for “Cosmic Conversations”, a public talk series on Astronomy and Society which has been running since 2007.
- “Cosmic Conversations”, September 2007, “Everything you ever wanted to know about the moon but were afraid to ask”; August 2008, “Nuclear Processes in the Cosmos”; 2009, “The Moon!”; April 2010, “Pluto’s demise and resurrection”; March 2011, “What the Zodiac Really Is”; September 2011,

“Planetary Nebulae: What a Beautiful Way to Die”; and December 2012, “Mayan myths and the End of the world”.

- American Astronomical Society Meeting, Amateur Astronomer Days, Indianapolis, IN, June 2013 “Pluto’s Demise and Resurrection”
- “Saturday Morning Science”, (x3), October 2003 “The Origin of the Elements”; “The Moon”; “Formation of the Solar System” April 2005 “Planetary Nebulae: What a Beautiful Way to Die”; February 2007 “Pluto’s demise and resurrection”; September 2011, “What the Zodiac Really Is”.
- “20/20 Columbia”, October 2011, “Astrology: Opium for the Masses”.
- Transit of Venus event – public talk on what the Transit is and why it is so rare and so important
- Columbia Public Schools Astronomy Day, October 2009, “Pluto: demise and resurrection”; May 2005 “Planetary Nebulae: What a Beautiful Way to Die”..
- St Louis Astronomical Society (SLAS), St Louis, MO, August 2009, “Formation of the Solar System”; October 2012, “The Lifecycle of Stardust”.
- International Year of Astronomy Event, Washington, MO, May 2009, “Pluto: demise and resurrection”;
- Mid-states Regional Astronomy League (MSRAL) Annual Meeting, Columbia, MO, March 2009 “Planetary Nebulae: what a beautiful way to die”;

OBSERVATIONAL PROGRAMS:

Observing time received since becoming tenure-track in September 2004:

- Spitzer Space Telescope, 30 hours to observe large circumstellar dust shell in the far infrared (PI)
- Spitzer Space Telescope, 32.6 hours to observe spectra of evolved stars in NGC 6822 (co-I)
- Gemini North/Michelle, 4 hours to do spatially resolved spectroscopic observations of SiC emission from carbon stars (PI)
- VLT/SINFONI, 3 half-nights to do spatially resolved spectroscopic measurements of Molecular Hydrogen Lines in the Globules in the Planetary Nebula NGC 7293 (co-I)
- Hubble space telescope, 16.1 hours to observe the evolution in dust emission from supernovae. (co-I)
- Spitzer Space Telescope, 24.5 hrs to observe more large circumstellar dust shells in the far infrared (co-I)
- Spitzer Space Telescope, 235 hrs legacy program to obtain spectroscopy of objects in the LMC (co-I)
- Spitzer Space Telescope, ~2.5 hrs to do far-infrared spectroscopy of bow-shock in R Hya. (co-I)
- Subaru/MOIRCS, 1 night to obtain medium resolution spectra of molecular hydrogen in multiple globules (co-I)
- Gemini North/Michelle, 6 hours to do spatially resolved mid-IR spectroscopic observations of UIR band emission carbon stars (co-I)
- Gemini North/NIRI/Altair 20 hours to do spatially resolved near-IR spectroscopic observations of UIR band emission carbon stars (co-I; PI is my grad student; classical run)
- Gemini North/Michelle 20 hours to do spatially resolved mid-IR spectroscopic observations of UIR band emission carbon stars (co-I; PI is my grad student; classical run)
- Gemini North/Michelle 10 hours to do spatially resolved mid-IR spectroscopic observations of dust emission from O-rich AGB stars (co-I; PI is my grad student; classical run)

PROFESSIONAL AFFILIATIONS & ACTIVITIES:

- Fellow of the Royal Astronomical Society,
- Full member of the American Astronomical Society, Councilor from 2011-2014.
- Member of the AAAS.
- MU Institutional Leader for CIRT (from Dec 2011)
- Chair of NOAO Users Committee. (2009 – 2011, member from 2004)
- Member of the Kitt Peak National Observatory Director search committee (2011)
- Member of NSF AST Review Panel (2012)

- Chair of review panel/Member of TAC for Spitzer Space Telescope Cycle 8 (2011)
- Review panel member for NASA ROSES (2011 and 2012).
- Member of the US Gemini Science Advisory Committee (2007 – 2009)
- Member of the NSF AAFP Review Panel (2008)
- Member of NRAO Observing Time Review/Allocation Panel (2008 – 2010).
- Co-chair of a SOFIA Workgroup (Chemical Evolution of the Galaxy; 2008)
- Reviewer of journal articles in e.g. ApJ, AJ, A&A, MNRAS, Nature, Science etc. (~4/year)
- Reviewer of Austrian Science Fund (FWF; Austrian equivalent of NSF) proposals
- Reviewer of NASA ROSES proposals.
- Reviewer of Chapters for Astronomy Textbooks (by, e.g., Fix, Chaisson & McMillan)
- Reviewer of Research Proposals submitted to internal funding committees.
- Member of Physics & Astronomy Curriculum Committee.
- Member of Astrophysics Faculty Search Committee
- Member of the MU General Education Task Force
- Faculty Advisor for the MU Society of Astronomy Students, and MU “Color Me Wild” Society
- Regular source for scientific stories in the Columbia Missourian (local newspaper) and on local radio/television as well as other publications (e.g. Click magazine: science for kindergartners).

STUDENT ADVISING (SEE LIST AT END OF CV)

- Currently advisor to 1 postdoc, 4 doctoral students, 1 masters student and 7 undergraduate students.
- Research advisor to 4 postdocs, 16 graduate, 34 UG and 3 high school students since Winter 2002.
- Graduated 5 Masters and 4 PhD.
- Supervised >100 (both national and international) conference presentations by students.
- Honorable Mention (three times!), MU Excellence in Advising Award, Office of the Provost.

TEACHING AND EDUCATIONAL ACTIVITIES

Classes taught at MU: (* indicates team-taught; F = Fall, W = Winter/Spring)

Astronomy 1010, Introduction to Astronomy; F02, F04, WS08*

Astronomy 1020, Introduction to Laboratory Astronomy; 2003 – 2011*

Astronomy 3010, Introduction to Modern Astrophysics; F02, F04, W11, W13[†]

Astronomy/Physics/Geology 4180/7180: Solar System Science; F05, F07, F09, F11

Astronomy/Physics 4250: Stellar Astrophysics; W06, W12

Astronomy/Physics 4550/7550 Cosmochemistry; F08, F10

Physics 4985: Issues in Modern Physics & Engineering (Writing Intensive Capstone Course)*; W09

Astro/Physics 432, Topics in Astronomy and Astrophysics: Stellar Structure and Evolution; F03

Astro/Physics 7301, Topics in Astronomy and Astrophysics: Stellar Structure and Evolution; F03

GN HON 2462H[†], Honors College Science Sequence: The Warm Little Planet; W09, W11, W12

*For 1010 and 1020, I continue to work behind the scenes on course development.

[†]Team taught – I team the Astronomy portion

[‡]Taught as Hybrid course/flipped course

Cosmic Conversations (co-taught with Val Germann) at Osher Life Long Learning Center – MU Extension program. Spring 2010

Regular guest lecturer in GEOL 3300: Geochemistry: Nucleosynthesis and the Origin of Elements and Isotopes

Institutional Lead for MU-CIRTL: Center for the Integration of Research, Teaching and Learning (www.cirtl.net)

Developed statewide standard for physical science general education courses.

Developing interactive computer simulations for teaching astronomy.

Member of Physics & Astronomy Curriculum Committee.

Member of the MU General Education Task Force (2009-10)

Member of the State of Missouri Curriculum Alignment Initiative Steering Committee.

Member of Omicron Delta Kappa Honor Society (honorary inductee, 2010)
 Director of Laws outreach program including providing tours/visit for pre-K – 12 school groups
 (averaging ~1 or 2 per month, from all over mid-MO)

PUBLICATIONS :

Total publications: 52 peer-reviewed, 92 conference proceedings, ~150 conference presentations, *h*-factor = 22, total citations >1250.

* denotes undergraduate, † denotes graduate student and ‡ denotes postdoctoral researcher advised by Angela Speck.

Manuscripts in preparation:

- A. Arrant, D.J.†, **Speck, Angela K.**, Chan, S. J.‡, “The effect of chemical abundance on the dust condensation in O-rich circumstellar environments”, submitted to *Monthly Notices of the Royal Astronomical Society*, expected submission July 2013
- B. Reel, M.,* **Speck, Angela K.**, Corman, Adrian B.†, Volk, Kevin, Sloan, G.C., Barlow, M.J., “The effect of pulsation on dust formation: the case of V Cyg”, expected submission August 2013.
- C. **Speck, Angela K.**, Pitman, K. M., Hofmeister, A. M., “Better Alternatives to ‘Astronomical Silicate’: Laboratory-Based Optical Functions of Glass With Chondritic/Solar Abundances With Application to HD 161796”, expected submission August 2013.
- D. Williams, L.A.* , **Speck, Angela K.**, Arrant, D.J.†, “The effect of aluminum on the spectral features of silicate glasses”, expected submission September 2013

Refereed Publications:

1. Messenger, S. J.* , **Speck, Angela K.**, Volk, K. “Probing the ‘30 μ m’ feature: lessons from extreme C stars”, 2013, *Astrophysical Journal*, **764**, 142.
2. Pitman, K. M., Hofmeister, A. M., & Speck, A. K., “Revisiting astronomical crystalline forsterite in the UV to near-IR”, 2013, *Earth, Planets, Space*, **65**, 129-138.
3. Bose, Maitrayee, Floss, Christine, Stadermann, Frank J., Stroud, Rhonda M., **Speck, Angela K.**, “Circumstellar and interstellar material in the CO3 chondrite ALHA77307: An isotopic and elemental investigation”, *Geochim. Cosmochim. Acta*, 2012, **93**, 77-101,
4. **Speck, A.K.**, “Variable Stars & The Asymptotic Giant Branch: Stellar Pulsations, Dust Production and Mass Loss”, *Journal of the American Association of Variable Star Observers*, 2012, **40**, 244-255.
5. Henry, R., **Speck, Angela K.**, Karakas, A., Ferland, G., “The Curious Conundrum Regarding Sulfur And Oxygen Abundances In Planetary Nebulae”, 2012, *Astrophysical Journal*, **749**, 61.
6. Creech-Eakman, M. J., Güth, T., Luttermoser, D. G., Jurgenson, C. A., **Speck, A. K.** “An Interferometrically Derived Sample of Miras with Phase using Spitzer: Paper I - A First Look”, 2012, *Astronomical Review*, **7**,(1), 2-24.
7. Guha-Niyogi, S. **Speck, Angela K.**, Volk, K. “Investigating spatial distribution of dust around SW Vir”, 2011, *Astronomical Review*, **6**,(8), 27-38.
8. **Speck, Angela K.**, Whittington, A.G., Tartar, J.B.†, Hofmeister. A.M., “Disordered Silicates in Space: a Study of Laboratory Spectra of ‘Amorphous’ Silicates”, 2011, *Astrophysical Journal*, **740**, 93-109.
9. Clayton, G.C., De Marco, O., Whitney, B., Babler, B., Gallagher, J. S., Nordhaus, J.C., **Speck, A.K.**, Wolff, M.J., Freeman, W.R, Camp, K.R., Lawson, W.A., Roman-Duval, J., Misselt, K.A., Meade, M., Sonneborn, G., Matsuura, M., and Meixner, M. “The Dust Properties of Hot R Coronae Borealis Stars and a Wolf-Rayet Central Star of a Planetary Nebula: in Search of the Missing Link” 2011, *Astronomical Journal*, **142**, 54-60.

10. Guha Niyogi, S.[†], **Speck, Angela K.**, Onaka, T. "The effect of stellar pulsation cycles on dust formation: a temporal study of mid-infrared spectra of O-rich AGB star, T Cep", 2011, *Astrophysical Journal*, **733**, 93-107.
11. Woods, Paul M., ..., **Speck, A. K.**, et al. "The SAGE-Spec Spitzer Legacy programme: the life-cycle of dust and gas in the Large Magellanic Cloud - Point source classification I", 2011, *Monthly Notices of the Royal Astronomical Society*, **411**, 1597-1627.
12. Srinivasan, S., ..., **Speck, A.K.**, et al. "The Mass-Loss Return From Evolved Stars To The Large Magellanic Cloud III: Dust Properties For Carbon-Rich Asymptotic Giant Branch Stars", 2010, *Astronomy & Astrophysics*, **524**, A49 (10pg) .
13. Kemper, F., ..., **Speck, A. K.**, et al. "The SAGE-Spec Spitzer Legacy program: The life-cycle of dust and gas in the Large Magellanic Cloud", 2010, *Publications of the Astronomical Society of the Pacific*, **122**, 683-700.
14. Pitman K.M.[‡], Hofmeister A.M., **Speck A.K.**, Dijkstra C.R.[‡], "Infrared laboratory absorbance spectra of olivine: Using classical dispersion analysis to extract peak parameters and optical constants temperature forsterite and fayalite absorbances", 2010, *Monthly Notices of the Royal Astronomical Society*, **406**, 460-481.
15. Sargent, B. A., Srinivasan, S., Meixner, M., Kemper, F., Tielens, A. G. G. M., **Speck, Angela K.**, Matsuura, M., Bernard, J.-Ph., Hony, S., Gordon, K.D., Indebetouw, R., Marengo, M., Sloan, G. C., Woods, P.M. SAGE-Spec Team "The Mass-Loss Return from Evolved Stars to the Large Magellanic Cloud II: Dust Properties for Oxygen-Rich Asymptotic Giant Branch Stars", 2010, *Astrophysical Journal*, **716**, 878-890.
16. Ueta, T., Stencel, R. E., Yamamura, I., Geise, K. M., Karska, A., Izumiura, H., Nakada, Y., Matsuura, M., Ita, Y., Tanabe, T., Fukushi, H., Matsunaga, N., Mito, H., **Speck, A. K.**, "The interface between the stellar wind and interstellar medium around R Cassiopeiae revealed by far-infrared imaging", 2010, *Astronomy & Astrophysics*, **514**, 16-21.
17. Oliveira, J. M., van Loon, J. Th., Chen, C.-H. R., Tielens, A. G. G. M., Sloan, G. C., Woods, P. M., Kemper, F., Indebetouw, R., Gordon, K. D., Boyer, M. L., Shiao, B., Madden, S., **Speck, A. K.**, Meixner, M., Marengo, M., "Ice Chemistry in Embedded Young Stellar Objects in the Large Magellanic Cloud" 2009, *Astrophysical Journal*, **707**, 1269-1295.
18. Matsuura, M., **Speck, A.K.** McHunu, B.M.[†], Tanaka, I., Wright, N.J., Smith, M.D., Viti, S., Zijlstra, A.A., "A 'firework' of H₂ knots in the Planetary Nebula NGC7293 (the Helix Nebula)", 2009, *Astrophysical Journal*, **700**, 1067-1077.
19. Hofmeister. A.M., Pitman, K.M.[‡], Goncharov, A.F., **Speck, A.K.**, "Optical Constants of Silicon Carbide for Astrophysical Applications. II. Extending Optical Functions from IR to UV Using Single-Crystal Absorption Spectra", 2009, *Astrophysical Journal*, **696**, 1502-1516.
20. **Speck, Angela K.**, Corman, Adrian B.[†], Wakeman, Kristina*, Wheeler, Caleb H.*, Thompson, Grant,* "Silicon carbide absorption features: dust formation in the outflows of extreme carbon stars", 2009, *Astrophysical Journal*, **691**, 1202-1221.
21. **Speck, Angela K.**, Whittington, Alan. G., Tartar, Josh B.[†], "The Cosmic Crystallinity Conundrum: clues from IRAS 17495-2534", 2008, *Astrophysical Journal Letters*, **687**, L91-L94.
22. Gruendl, R.A., Chu, Y.-H., Seale, J. P., Matsuura, M., **Speck, A. K.**, Sloan, G. C., Looney, L. W., "Discovery of extreme carbon stars in the Large Magellanic Cloud", 2008, *Astrophysical Journal Letters* **688**, L9-L12.
23. Pitman K.M.[‡], Hofmeister A.M., **Speck A.K.**, "Optical properties of silicon carbide for astrophysical applications: I. New laboratory infrared reflectance spectra and optical constants", 2008, *Astronomy & Astrophysics*, **483**, 661-672.

24. Nuankhieo, P., Ruzhitskaya, L.[†], Moore, L. J., & **Speck, A.** "Affordances of An Astronomy Laboratory Simulation", 2008, *Academic Exchange Quarterly*, **12(4)**, 136-141.
25. Matsuura, M., **Speck, A.K.**, Smith, M.D. , Zijlstra, A.A., Lowe, K.T.E., Viti, S., Redman, M., Wareing, C.J., Lagadec, E., "VLT / Infrared Integral Field Spectrometer Observations of Molecular Hydrogen Lines in the Globules in the Planetary Nebula NGC 7293 (the Helix Nebula)", 2007, *Monthly Notices of the Royal Astronomical Society*, **382**, 1447-1459.
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Selected Abstracts (*i.e. abstracts that did not subsequently become conference proceedings papers*)

1. The Effect of Composition on the Spectral Features of Silicate Glasses: The Effect of Aluminium – ORAL
Angela Speck; Alan G. Whittington; Anne M. Hofmeister
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #110.01
2. Inclusive Design for Learning – Making Your Classroom Accessible – ORAL
Angela Speck; Gina Ceylan
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #201.02
3. New Laboratory-Based Optical Functions of Cosmic Abundance Glass: Comparison to "Astronomical Silicates" and Application to Post-AGB Object HD 161796 – ORAL
Angela Speck; Karly M. Pitman; Anne M. Hofmeister; Alan G. Whittington
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #202.03
4. Pluto's Demise and Resurrection – ORAL
Angela Speck
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, EPO talk
5. Modeling the Extended Dust Shell Around AFGL 618 – POSTER
Laura Hosmer; **Angela Speck**; M. Meixner; D.C. Lis; M.M. Nenkova; M. Elitzur
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #216.13
6. Investigating the Variance of Mid-infrared Dust Spectral Features of Oxygen-rich AGB Stars – POSTER
Adam Eshein; **Angela Speck**
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #216.14
7. Modeling the Mineralogy of Dust Around Obscured, Oxygen-rich AGB Star, IRAS 17495-2534 – POSTER
David Nash; **Angela Speck**
American Astronomical Society Meeting 222, Indianapolis, IN, June 2013, #216.15
8. Clumpy Molecular Hydrogen in the Dumbbell Nebula – POSTER
Baldrige, Sean; **Speck, A.**; Matsuura, M.; Jacoby, G
American Astronomical Society Meeting 221, Long Beach, CA, January 2013, #216.14
9. Pitman, Karly M.; **Speck, A.**; Hofmeister, A. M.; Buffard, A. S.; Whittington, A. G
Better Alternatives to "Astronomical Silicate": Laboratory-Based Optical Functions of Cosmic Abundance Glass with Application to HD 161796 – ORAL
American Astronomical Society Meeting 221, Long Beach, CA, January 2013, #223.04
10. The Enigmatic 13 Micron Feature in the Spectra of AGB Stars – POSTER
De Souza, Nelson; **Speck, A.**
American Astronomical Society Meeting 221, Long Beach, CA, January 2013, #145.03
11. The Effects of Stellar Chemistry on the Broad 9-15 Micron Spectral Feature of O-rich AGB Stars – POSTER
Arrant, David J.; **Speck, A.**
American Astronomical Society Meeting 221, Long Beach, CA, January 2013, #145.02
12. An Exploration of the Dust Spectral Features of the Carbon-Rich Star V Cyg Through Time and Space Reel, Matthew; **Speck, A.**; Volk, K.; Sloan, G. C.

- American Astronomical Society Meeting 221, Long Beach, CA, January 2013, #145.01
13. Cosmic Conversations: Training STEM Students to Speak to the Public – ORAL
Angela Speck, Lanika Ruzhitskaya
Communicating Science, Tucson, AZ, August 2012
 14. Going Virtual? or Not – POSTER
Angela Speck, Lanika Ruzhitskaya, Nan Ding, Sean Baldrige, Stephen Witzig, James Laffey
Communicating Science, Tucson, AZ, August 2012
 15. 3D Virtual Reality for Teaching Astronomy – ORAL
Angela Speck, L. Ruzhitskaya[†], J. Laffey, N. Ding
American Astronomical Society Meeting 219, Austin, TX, January 2012, #227.03
 16. Astronomy in Sustainable Energy: A New Approach to Make It Matter – ORAL
Lanika Ruzhitskaya[†], **Angela Speck**
American Astronomical Society Meeting 219, Austin, TX, January 2012, #227.06
 17. Bringing Science Public Outreach to Elementary Schools – ORAL
Lucas Miller*, **A. Speck**, A. Tinnin
American Astronomical Society Meeting 219, Austin, TX, January 2012, #210.06
 18. Investigating Chemical Compositions of Select Saturnian Satellites via Mosaicking of Cassini VIMS Observations – POSTER
Laura Hosmer*, C. Dalle Ore, R. Mastrapa, **A. Speck**.
American Astronomical Society Meeting 219, Austin, TX, January 2012, #334.14
 19. Differential Depletion of Mg and Fe in Planetary Nebulae: Implications for the Composition of AGB-Star Dust – POSTER
Harriet L. Dinerstein, F. Prasla, **A. K. Speck**
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.01
 20. Spitzer SAGE/LMC Observations Of Extreme Carbon Stars As A Probe Of Carbon-rich Stardust Properties – POSTER
Nicholas Parmley*, **A. K. Speck**, A. J. Mulia*, SAGE-Spec team
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.02
 21. The Enigmatic 13 micron Feature in the Spectra of AGB Stars – POSTER
Nelson De Souza[†], **A. K. Speck**
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.03
 22. Modeling the Effect of Pulsation on the Dust Spectrum of Carbon Star V Cyg – POSTER
Angela Speck, B. Hester*, A. Corman[†], K. Volk, G. C. Sloan
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.04
 23. Understanding Stardust via Spatially-Resolved Spectroscopy: A Case Study on R Hya – POSTER
Aaron Kaberline*, S. Guha Niyogi[†], **A. K. Speck**, K. Volk
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.11
 24. The Effect Of Metallicity And C/O On The Low-Contrast Dust Features Of Low-Mass-Loss Rate O-Rich AGB Stars – POSTER
David J. Arrant[†], **A. K. Speck**, S. J. Chan[†]
American Astronomical Society Meeting 219, Austin, TX, January 2012, #343.13
 25. Mass-loss History of a 'typical' AGB Star, Mira, Using Far-Infrared Imaging Photometry – POSTER
Basil Menzi Mchunu[†], **A. K. Speck**
American Astronomical Society Meeting 219, Austin, TX, January 2012, #439.24
 26. UV-Visible Laboratory Spectra Of Presolar Oxide And CAI Analogs: Corundum, Spinel, Hibonite, And Melilites – ORAL
Karly M. Pitman, A. M. Hofmeister, **A. K. Speck**

- American Astronomical Society Meeting 219, Austin, TX, January 2012, #320.01
27. Mini-Journals: Incorporating Inquiry, Quantitative Skills and Writing into Homework Assignments for Geochemistry and Planetary Science – POSTER
Whittington, A.G., **Speck, A.K.**, Witzig, S.B., and Abell, S.K.,
EOS, Transactions AGU. AGU 2011 Fall meeting, San Francisco, CA. Abstract ED11A-0757
 28. Analyzing Dust Spectra Of Oxygen-rich AGB Stars Using Spatially Resolved Spectroscopy – POSTER
Guha Niyogi, Suklima[†], **Speck, A. K.**, Volk, K.
American Astronomical Society Meeting 218, Boston, MA, May 2011, #322.04
 29. Through The Looking Glass: New Laboratory Spectra Of Glassy Silicates For The Comparison To Astrophysical Environments – POSTER
Speck, Angela, Whittington, A., Hofmeister, A.
American Astronomical Society Meeting 218, Boston, MA, May 2011, #129.22
 30. Variable Stars and The Asymptotic Giant Branch: Stellar Pulsations, Dust Production and Mass Loss – ORAL
Speck, Angela
American Astronomical Society Meeting 218, Boston, MA, May 2011, #114.04
 31. Peer interaction: help or distraction? – ORAL
Ruzhitskaya, L. [†], **Speck, A. K.**
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #405.07
 32. Guided Versus Unguided Learning: Which One To Choose? – ORAL
Ruzhitskaya, L. [†], **Speck, A. K.**
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #405.06
 33. Identity Crisis: True Composition of Circumstellar Dust Questioned – POSTER
Miller, L.* **Speck, A. K.**, Guha Niyogi, S. [†]
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #250.16
 34. Effects of Temperature and Composition on Spectral Features of the Olivine minerals – POSTER
Guha Niyogi, S. [†] **Speck, A. K.**, Dijkstra, C.
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #250.15
 35. Studying the Effect of C/O Ratio on Dust around Carbon Star – POSTER
Knoll, H.* **Speck, A. K.**,
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #250.14
 36. The Effect Of Chemical Abundances On Dust Formation: Stellar Nucleosynthesis Vs. Metallicity. – POSTER
Speck, A. K., Chan, S.J. [‡]
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #250.12
 37. Understanding S Stars by C/O Ratios and s-Process Element Abundances – POSTER
Arrant, D. [†], **Speck, A. K.**,
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #250.11
 38. UV-Visible Laboratory Spectra Of Dust Analogs: Mg-silicates, Spinel, And Glasses – POSTER
Pitman, Karly M. [‡], Hofmeister, A. M., **Speck, A. K.**,
American Astronomical Society Meeting 217, Seattle, WA, January 2011, #112.06
 39. Can dust and molecules explain the sulphur anomaly in planetary nebulae? - POSTER
Speck, A. K., Henry, R.
Asymmetric Planetary Nebulae 5 conference, held in Bowness-on-Windermere, U.K., 20 - 25 June 2010
 40. Incorporating inquiry into upper-level undergraduate homework assignments: The Mini-Journal. – POSTER
Whittington, A.G., **Speck, A.K.**, Witzig, S.B., and Abell, S.K.,

- EGU Annual meeting, Vienna, Austria. 2010
41. Dust from Evolved Stars to Protostars – ORAL
Meteoritical Society Pre-meeting Workshop on Disks, Meteorites, Planetessimals, July 23 – 24, 2010, New York, NY. Abstract No. 6018.
 42. The Origin of Presolar Silica Grains in AGB Stars – POSTER
Bose, M., Floss, C., Stadermann, F. J., Stroud, R. M., **Speck, A. K.**
41st Lunar and Planetary Science Conference, held March 1-5, 2010 in The Woodlands, Texas. LPI Contribution No. 1533, p.1812
 43. Laboratory Spectra of Astronomical Dust Analogs at Ultraviolet-Visible Wavelengths – POSTER
Pitman, Karly M.[‡], Hofmeister, A. M., **Speck, A. K.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #476.03
 44. A New Method For Obtaining Optical Constants In The Near-IR To UV From Single-Crystal Absorption Spectra: SiC And Silicates As Examples – POSTER
Hofmeister, Anne M., Pitman, K. M.[‡], **Speck, A. K.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #476.02.
 45. Virtual Jupiter - Real Learning – POSTER
Ruzhitskaya, Lanika[†], **Speck, A.**, Laffey, J.
American Astronomical Society Meeting 215, Washington, DC, January 2010, #466.06
 46. The Mass Loss Return from Evolved Stars to the Large Magellanic Cloud: Oxygen-Rich Asymptotic Giant Branch Stars – POSTER
Sargent, Benjamin A., Srinivasan, S., Meixner, M., Kemper, F., Tielens, X., **Speck, A.**, Matsuura, M., Bernard, J., Hony, S., Gordon, K., and 5 coauthors
American Astronomical Society Meeting 215, Washington, DC, January 2010, #459.06
 47. Can Dust and Molecules Explain the Sulfur Anomaly in Planetary Nebulae?
Speck, Angela, Henry, R. – POSTER
American Astronomical Society Meeting 215, Washington, DC, January 2010, #454.22
 48. New SiC Optical Constants – POSTER
Corman, Adrian[†], **Speck, A.**, Hofmeister, A., Pitman, K.[‡].
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.23
 49. Spitzer Reveals New Insights into Mass Loss History of Evolved Stars
Geise, Kathleen M., Ueta, T., **Speck, A. K.**, Izumiura, H., Stencel, R. E.
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.14
 50. The Relationship Between the Dust Condensation Sequence for Oxygen-rich Circumstellar Environments and the C/O Ratio . – POSTER
Chan, S. Josephine[‡], **Speck, A. K.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.12
 51. Testing The Sensitivity Of Spectral Feature Parameters To Analysis Methods - "10 Micron" Features In OH/IR Stars – POSTER
Randolph, Cindy*, Myers, E.* , **Speck, A.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.07
 52. Laboratory Spectra of Glassy Silicates for the Comparison to Astrophysical Environments – POSTER
Newgard, Arielle L.[†], **Speck, A.**, Whittington, A., Hofmeister, A., Tartar, J.[†], Williams, K.*
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.06
 53. Identity Crisis: True Composition of Circumstellar Dust Questioned – POSTER
Miller, Lucas*, **Speck, A.**, Guha Niyogi, S.[†]
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.05.

54. A Temporal Study of O-rich Pulsating Variable AGB Star, T Cep: Investigation on Dust Formation, Mineralogy and Morphology of Dust Grains – POSTER
Guha Niyogi, Suklima, [†] **Speck, A.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.04
55. Mythbusting Stardust Formation Scenarios: Crystalline Silicates And New Insights Into Oxygen-rich AGB Stars. – POSTER
Fletcher, Corinne, * **Speck, A.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.02
56. The 8-14 Micron Feature in S Stars: O Positive or O Negative – POSTER
Arrant, David J. [†], **Speck, A.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #431.01
57. Comparing Carbon Dust Grain Types from the Milky Way and the Large Magellanic Cloud – POSTER
Mulia, Alexander, * **Speck, A. K.**
American Astronomical Society Meeting 215, Washington, DC, January 2010, #428.09
58. Focusing on the Processes of Science Using Inquiry-oriented Astronomy Labs for Learning Astronomy - ORAL
Speck, Angela, Ruzhitskaya, L. [†], Whittington, A., Witzig, S.
American Astronomical Society Meeting 215, Washington, DC, January 2010, #21706S
59. Incorporating inquiry into upper-level homework assignments: The mini-journal. – POSTER
Whittington, A.G., **Speck, A.K.,** Witzig, S.B., and Abell, S.K.
AGU Fall meeting, San Francisco, CA, 2009.
60. What do students in an introductory astronomy course believe science is? – POSTER
Hanuscin, D., **Speck, A.,** & Ruzhitskaya, L.
American Association of Physics Teachers. Chicago, IL, February 2009.
61. PAH Formation: 3.3 And 11.3 μm Data - POSTER
Caputo, Daniel P. [†], **Speck, A.,** Volk, K., Barlow, M., Wesson, R.
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.11
62. Optical Properties Of Silicon Carbide: Implications Of New Laboratory Data - POSTER
Corman, Adrian [†], **Speck, A.,** Hofmeister, A., Pitman, K. [‡]
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.09
63. Through The Looking Glass: The Causes Of Variations In "Amorphous" Silicate Spectral Features - POSTER
Speck, Angela, Hofmeister, A. M., Whittington, A. G.
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.08
64. Using Classical Dispersion Analysis to Extract Peak Parameters, Optical Constants from IR Lab Absorbance Spectra: Olivine - POSTER
Pitman, Karly M. [‡], Dijkstra, C. R. [‡], Hofmeister, A. M., **Speck, A. K.**
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.07
65. The Relationship Between C/O Ratio and the Dust Condensation Sequence for O-rich Circumstellar Environments - POSTER
Chan, S. Josephine [‡], **Speck, A.**
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.04
66. The Effect of Stellar Pulsation Cycles on Dust Formation: A Temporal Study of the Mid-infrared Spectrum of O-rich AGB Star, T Cep. - POSTER
Guha Niyogi, Suklima [†], **Speck, A.**
American Astronomical Society Meeting 214, Pasadena, June 2009, #402.02
67. Kepler's Laws in an Introductory Astronomy Laboratory: The Influence of a Computer-based Simulation Used With Multiple Variables - ORAL

- Ruzhitskaya, Lanika[†], French, R. S., **Speck, A.**
American Astronomical Society Meeting 214, Pasadena, June 2009, #312.03
68. The Dusty Universe - From Spitzer to Herschel: Dust Formation and Spectroscopy - ORAL
Speck, Angela
American Astronomical Society Meeting 214, Pasadena, June 2009, #232.03
69. Stellar Pulsation and the Variability of Infrared Spectral Features – POSTER
Speck, Angela, Guha Niyogi, Suklima[†]
American Astronomical Society Meeting 213, Long Beach, CA, January 2009, #412.03
70. Misconceptions in Astronomy: Before and After a Constructivist Learning Environment - ORAL
Ruzhitskaya, Lanika[†], **Speck, Angela**
American Astronomical Society Meeting 213, Long Beach, CA, January 2009, #353.04
71. Innovations in Inquiry-Based Laboratory Exercises for Non-Majors Astronomy Courses: Connecting Undergraduates with the Enterprise of Science - ORAL
Speck, Angela, Ruzhitskaya, Lanika[†], Weaver, Jan
American Astronomical Society Meeting 213, Long Beach, CA, January 2009, #353.03
72. Examining the importance of the input spectrum when modeling S Stars
Arrant, David[†], **Speck, Angela**, Volk, Kevin
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
73. Understanding the Formation of PAHs: A case study on carbon-rich AGB stars
Caputo, Dan[†], **Speck, Angela**, Volk, Kevin, Barlow, Mike
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
74. The Silicon Carbide Feature of V Cyg
Corman, Adrian[†], **Speck, Angela**, Volk, Kevin, Barlow, Mike, Sloan, Greg.
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
75. New Silicon Carbide Optical Constants
Corman, Adrian[†], **Speck, Angela**, Pitman, K.[‡], Hofmeister, A.M.
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
76. Extended Circumstellar Dust Shells of post-AGB Stars: ISOPHOT imaging
Mchunu, B.M.[†], **Speck, Angela**,
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
77. The effect of stellar pulsation cycles on dust formation: a temporal study of the mid-infrared spectrum of O-rich AGB star, T Cep
Guha Niyogi, Suklima[†], **Speck, Angela**
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
78. The Formation of crystalline silicate: Lessons from an obscured O-rich AGB star
Speck, Angela, Whittington, Alan, Tartar, J. B.[†]
Cosmic Dust – Near and Far, Heidelberg Germany, September 2008.
79. Far Infrared Observations Of Oxygen Rich AGB Stars Using ISOHOT Imaging - POSTER
Mchunu, B.M.[†], **Speck, A.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #17.10
80. Project CLEA - The Moons of Jupiter: Understanding the Kepler's Laws in Astronomy 101 - POSTER
Ruzhitskaya, L.[†], **Speck, A.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #40.02
81. Understanding Dust Formation around AGB Stars: Rethinking the Condensation Sequence around S Stars - POSTER
Arrant, D.J.[†], Taylor, M., **Speck, A.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.08

82. Understanding The Conditions For Crystalline Silicate Formation: Lessons From An Obscured AGB Star - POSTER
Speck, A., Whittington, A.
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.07
83. Circumstellar Crystalline Silicates: Evolved Stars - POSTER
Tartar, J. [†], **Speck, A.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.06
84. The Formation of PAHs: A Case Study on Carbon-rich AGB Stars - POSTER
Caputo [†], J., **Speck, A.**, Barlow, M.J., Wesson, R., Volk, K., Clayton, G.C.
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.04
85. Understanding the Dust Condensation Sequence for O-rich AGB through Radiative Transfer Modeling. - POSTER
Smith, Anthony*, Wheeler, C.H.*, **Speck, A.K.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.03
86. Investigating The Effect Of The C/O Ratio On Dust Formation Around Carbon Stars - POSTER
Corman, Adrian [†], **Speck, A.K.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #06.01
87. Quantitative Laboratory Measurements Of IR Spectra Of Diverse Glasses Suggest That Dust In Space Is Crystalline - POSTER
Hofmeister, Anne M., **Speck, A.K.**
American Astronomical Society Meeting 212, St Louis, MO, June 2008, #03.34
88. Unidentified infrared bands and the formation of PAHs around carbon stars - ORAL
Speck, A., Barlow, M.J., Wesson, R., Volk, K., Clayton, G.C.
IAU Symposium 251: Organic Matter in Space, Hong Kong, China, February 2009.
89. Preliminary Infrared Spectral Models of S Star Circumstellar Dust - POSTER
Arrant, David J. [†], **Speck, A.**
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.14
90. Understanding Extreme Carbon Stars: Condensation Temperature, Grain Sizes, and Silicon Carbide Absorption - POSTER
Corman, Adrian [†], **Speck, A.**
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.08
91. Understanding the Dust Condensation Sequence in "13 μ m-Feature" Oxygen-Rich AGB Stars Using Radiative Transfer Models - POSTER
Wheeler, Caleb*, **Speck, A. K.**
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.05
92. Modeling the Effect of the Silicate Condensation Sequence on AGB Stellar Spectrum - POSTER
Smith, Anthony A. *, **Speck, A. K.**
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.04
93. IRAS 17495-2534: A Symbiotic Star with Crystalline Silicates or Evidence of Crystalline Silicates in the ISM? - POSTER
Speck, Angela, Whittington, Alan
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.01
94. Stellar Properties in the Classroom: From Parallax to Radius - ORAL
Ruzhitskaya, Lanika [†], **Speck, A.**
American Astronomical Society Meeting 211, Austin, TX, January 2008, #70.07
95. The Effect of Grain Size and Shape on the Spectrum of Silicon Carbide - POSTER
Azmeah, Chris*, Corman, A. [†], **Speck, A.K.**, Pitman, K. [†], Hofmeister, A.
American Astronomical Society Meeting 211, Austin, TX, January 2008, #93.13

96. Dust at Low Metallicity: Spitzer Observations of AGB Stars in NGC 6822 - POSTER
Schuyler Van Dyk, Ciska Kemper, **Angela Speck**, Ryszard Szczerba, Margaret Meixner, E. Peeters & T. Ueta
American Astronomical Society Meeting 209, Seattle, WA, January 2007, #168.13
97. Laboratory Infrared Optical Constants and Reflectance Spectra of Silicon Carbide - POSTER
Karly M. Pitman[‡], Anne M. Hofmeister & **Angela K. Speck**
American Astronomical Society Meeting 209, Seattle, WA, January 2007, #06.02
98. Spitzer/MIPS infrared imaging of extremely extended circumstellar shells - TALK
Angela Speck & the MIRIAD team
Why Galaxies Care About AGB Stars, Vienna, Austria, August 7-11th 2006.
99. The Carbon Star Dust Sequence: Evolution of the SiC in Dust Circumstellar Outflows of C-Stars - POSTER
Adrian Corman[†], Grant Thompson*, **Angela Speck** & Catharinus Dijkstra[‡]
Why Galaxies Care About AGB Stars, Vienna, Austria, August 7-11th 2006.
100. SiO₂ Around O-rich AGB Stars - Astromineralogy & The "13 μ m" Feature – POSTER
Kyle DePew[†], **Angela Speck**, Anthony Smith*, Catharinus Dijkstra* & Anne Hofmeister.
Why Galaxies Care About AGB Stars, Vienna, Austria, August 7-11th 2006.
101. Tracing the mass loss Histories of post-AGB Stars : ISOPHOT imaging – POSTER
B.M. Mchunu[†], **Angela Speck** & Margaret Meixner
Why Galaxies Care About AGB Stars, Vienna, Austria, August 7-11th 2006.
102. CLOUDY Modeling of Weird Far-IR Emission in the Central Zone of the Helix Nebula - POSTER
Adrienne Dove* & **Angela Speck** - POSTER
IAU Symposium 234: Planetary Nebulae in our Galaxy and Beyond, Waikaloa, HI, April 3-7 2006.
103. Spitzer/MIPS Infrared Imaging of the Extremely Extended Circumstellar Dust Shells - POSTER
Angela K. Speck, Toshiya Ueta, Robert Stencel & the MIRAD team.
IAU Symposium 234: Planetary Nebulae in our Galaxy and Beyond, Waikaloa, HI, April 3-7 2006.
104. An HST Study of the Molecular Gas in Planetary Nebulae - POSTER
Josh Tartar[†], **Angela Speck**, & Sarah Eyermann[†]
IAU Symposium 234: Planetary Nebulae in our Galaxy and Beyond, Waikaloa, HI, April 3-7 2006.
105. The 3 μ m water ice/vapour feature of (post-)AGB stars - POSTER
Dijkstra, C.[‡], Justtanont, K., Dominik, C., Waters, L., Matsuura, M., **Speck, A.K.**, Cami, J., Yamamura, I.
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.18
106. Tracing the mass-loss histories of (post-)AGB stars: ISOPHOT imaging - POSTER
Mchunu, B. M.[†], **Speck, A. K.** Meixner, M.
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.17
107. SiO₂ Around O-rich AGB Stars - Mineralogy & The "13 μ m" Feature - POSTER
DePew, K. D.[†], **Speck, A. K.**, Dijkstra, C.[‡], Hofmeister, A. M.
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.16
108. Spitzer/MIPS Infrared Imaging of the Extremely Extended Circumstellar Dust Shell of HD 161796 - POSTER
Speck, A. K., Ueta, T., Stencel, R., MIRIAD Collaboration
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.15
109. Radiative Transfer Modeling of the Extended Dust Shell of AFGL 618 - POSTER
Tartar, J.[†], **Speck, A.**, Meixner, M., Nenkova, M., Elitzur, M.
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.14
110. The Carbon Star Dust Sequence: Evolution of SiC Dust Circumstellar Outflows of C-Stars - POSTER
Thompson, G. D.* , **Speck, A. K.**, Dijkstra, C.[‡]

- American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.07
111. An Investigation of the Dust Shells Around Carbon Stars Using Radiative Transfer Modeling - POSTER
Corman, A. B.* , **Speck, A. K.**
American Astronomical Society Meeting 207, Washington, DC, January 2006 #182.05
112. HST study of the molecular gas in planetary nebulae - POSTER
Hamacher, D.* , Eyermann, S.* , **Speck, A. K.**, Meixner, M.
American Astronomical Society Meeting 207, Washington, DC, January 2006 #08.08
113. Mineralogy of Dust in the Outflows of Asymptotic Giant Branch Stars - ORAL
Speck, A.K.
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #28.02 (invited talk)
114. Submillimeter Imaging of Fossil Dust Shells around Post-AGB Stars - POSTER
Wilson, K.* , **Speck, A.**, Lis, D., Meixner, M.
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #08.04
115. Modeling Periodic Mass-loss Changes in the Fossil Shells around Post-AGB Stars - POSTER
Tartar, J.* , **Speck, A.**, Meixner, M., Elitzur, M.
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #06.06
116. The Nature and Evolution of Silicon Carbide in the Outflows of Carbon Stars - POSTER
Thompson, G. D.* , **Speck, A. K.**, Hofmeister, A. M.
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #06.05
117. Dust around evolved stars in the Magellanic Clouds - POSTER
Reid, B.* , **Speck, A.**, Dijkstra, R.*
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #06.03
118. Mineralogy of Dust Around O-rich AGB Stars - The "13um" Feature
DePew, K.* , **Speck, A.K.**,
American Astronomical Society Meeting 206, Minneapolis, MN, June 2005 #06.04
119. The Evolution of Molecular Hydrogen in Planetary Nebulae - POSTER
Eyermann, S. E.* , **Speck, A.K.**
American Astronomical Society Meeting 205, San Diego, CA, January 2005 #138.11
120. Astromineralogy of Intermediate Mass Evolved Stars in the Magellanic Clouds - POSTER
Reid, R. B.* , **Speck, A.K.**
American Astronomical Society Meeting 205, San Diego, CA, January 2005 #58.03
121. Stardust: observational evidence of mass-loss processes in the history of the Egg Nebula - POSTER
Tartar, J.* , **Speck, A.K.**
American Astronomical Society Meeting 205, San Diego, CA, January 2005 #58.02
122. Silicon carbide: a case study in the astrophysics of stardust - POSTER
Speck, A.K.
American Astronomical Society Meeting 205, San Diego, CA, January 2005 #58.01
123. Observational Evidence for Presolar Grains around Oxygen-rich Evolved Stars - POSTER
Speck, A.K., Hofmeister, A. M.
American Astronomical Society Meeting 203, Atlanta, GA, January 2004 #49.06
124. Processing of presolar grains around post-AGB stars: SiC as the carrier of the ``21"μ m feature -
POSTER
Hofmeister, A. M., **Speck, A.K.**
American Astronomical Society Meeting 203, Atlanta, GA, January 2004 #49.09
125. Episodic Mass Loss on the Timescale of Thermal Pulses: Radiative Transfer Modeling - POSTER
Miller, B. A.* , **Speck, A.K.**, Meixner, M.
American Astronomical Society Meeting 203, Atlanta, GA, January 2004 #49.08

126. The carrier of the 13 μ m feature in the spectra of O-rich AGB stars - POSTER
Mora, M. Y. *, **Speck, A.K.**,
American Astronomical Society Meeting 203, Atlanta, GA, January 2004 #137.02
127. Observational Evidence for Presolar Grains around Oxygen-rich Evolved Stars - ORAL
Speck, A.K., Hofmeister, A. M., Mora, M.*
Workshop on Cometary Dust in Astrophysics, Mt Rainier, WA, August 2003
128. Absorption and reflection IR spectra of MgO and other diatomic compounds. - POSTER
Hofmeister, A. M., **Speck, A.K.**
Astrophysics of Dust Conference, Estes Park, CO, May 2003
129. Episodic Mass Loss on the Timescale of Thermal Pulses: Submillimeter Observations of Dust Shells. - POSTER
Speck, Angela, Lis, Darek, Meixner, Margaret, Knapp, Gillian
Astrophysics of Dust Conference, Estes Park, CO, May 2003
130. Episodic Mass Loss on the Timescale of Thermal Pulses: Radiative Transfer Modeling - POSTER
Speck, Angela, Nenkova, Maia, Meixner, Margaret, Elitzur, Moshe, Knapp, Gillian
Astrophysics of Dust Conference, Estes Park, CO, May 2003
131. The Dust Ring of LBV Candidate HD 168625 - POSTER
O'Hara, T.B., Meixner, M., **Speck, A.K.**, Ueta, T., Bobrowsky, M.
American Astronomical Society Meeting 201, Seattle, WA, January 2003
132. Near-IR and BIMA CO Observations of the Red Rectangle - POSTER
Doering, R., Meixner, M., Fong, D., Zalucha, A., Maxham, A., **Speck, A.K.**
American Astronomical Society Meeting 201, Seattle, WA, January 2003
133. Periodic Enhancements in Mass Loss on the AGB: Radiative transfer modeling of the parsec-sized dust shell around the Egg Nebula - POSTER
Speck, A.K., Meixner, M., Nenkova, M. & Elitzur, M.,
"Workshop on Mass-losing Pulsating Stars and their Circumstellar Matter, Sendai Japan, May 2002.
134. Processing of Presolar Grains Around Post-AGB Stars: Silicon Carbide as the Carrier of the 21 μ m Feature - ORAL
Speck, A.K., & Hofmeister, A.M.,
Lunar & Planetary Science Conference, Houston, **33**, #1155, March 2002.
135. Formation of Presolar Crystalline Silicates: The Effect of ²⁶Al - ORAL
Speck, A.K., Kemper, F., Whittington, A.G., Molster, F.J. & Herwig, F.,
Lunar & Planetary Science Conference, Houston, **33**, #1155, March 2002.
136. Large-scale extended emission around the Helix Nebula - ORAL
Speck, A.K. Meixner, M., Fong, D. McCullough, P.R., Moser, D.E. & Ueta, T.
American Astronomical Society Meeting 199, Washington DC, January 2002
137. Dust around oxygen-rich evolved stars – ORAL
Speck, A.K., Hofmeister, A.M., Barlow, M.J. & Sylvester, R.J.
Workshop on Interstellar Silicates, Leiden, The Netherlands, April 2001
138. Observations of Circumstellar Dust Shells Around Proto-Planetary Nebulae - POSTER
Meixner, M, **Speck, A.K.**, Ueta, T., Knapp, G., Hoffmann, W., Hinz, P.M., Hora, J., Fazio, G., Deutsch, L.
American Astronomical Society Meeting 197, #06.13
139. Infrared Studies of Silicon Carbide - POSTER,
Speck, A.K., & Hofmeister, A.M.
at 63rd Annual Meeting of the Meteoritical Society: Chicago, IL, August 28 - September 1, 2000:
140. Observational Evidence for Presolar Grains around Oxygen-rich Evolved Stars - ORAL ,
Speck, A.K., Hofmeister, A.M. Barlow, M.J. & Sylvester, R.J.,

- at 63rd Annual Meeting of the Meteoritical Society: Chicago, IL, August 28 - September 1, 2000
141. Silicon Dioxide in the Infrared Spectra of Oxygen-rich Evolved Stars - POSTER,
Speck, A.K., Barlow, M.J., & Sylvester, R.J.,
at Astrochemistry: From Molecular Clouds to Planetary Systems, IAU Symposium 197, Cheju Island, South Korea, Aug 23-27, 1999
 142. Resolution of the SiC problem: astronomical and meteoritic evidence reconciled - POSTER
Speck, A.K., Hofmeister, A.M., & Barlow, M.J.,
at Asymptotic Giant Branch Stars, IAU Symposium 191 Poster Session, #P3-21, held in Montpellier, France, Aug 28 – Sept 1, 1998
 143. Silicon Carbide: astronomical and meteoritic evidence reconciled – POSTER
Speck, A.K., Hofmeister, A.M., & Barlow, M.J.,
at the Faraday Discussion no. 109: Chemistry and Physics of Molecules and Grains in Space, The University of Nottingham, UK, 15-17 April 1998. - *joint winner of the Skinner Poster Prize.*
 144. Silicon Carbide absorption features in the outflows of carbon stars - POSTER
Speck, A.K., & Barlow, M.J.,
at the "Conference on the Astrophysical Implications of the Laboratory Study of Presolar Materials", Washington University, St Louis, MO, October 1996
 145. Observations of the 11 micron Silicon Carbide Feature in Carbon Star Shells - POSTER
Speck, A.K., Barlow, M.J., & Skinner, C.J.
at the IAU Symposium 177 "The Carbon Star Phenomenon", Antalya, Turkey, May 1996.
 146. Digital elevation models of the North Polar regions of Mars - POSTER,
Speck, A.K., Murray, J.B., & Rothery, D.A.,
1995, *L.P.S.C.*, **26**, 1017.
(I was involved in this work after the abstract was submitted - my name does not appear on this abstract - but it did appear on the poster - the other authors can confirm my involvement in this work.)

ADVISING

Graduate Advisor in Department of Physics & Astronomy

- | | | |
|------------------------|-------|--|
| 1. Matthew Reel | M.S | from May 2013 |
| 2. Hannah Groom | Ph.D | from August 2012 |
| 3. Bradley Mills | Ph.D. | from August 2012 |
| 4. Sean Baldrige | Ph.D | from August 2011 |
| 5. Nelson DeSouza | M.S. | from August 2011; graduated May 2013 |
| 6. Brandon Hester | M.S. | from August 2010; graduated December 2011. |
| 7. Arielle Newgard | Ph.D | from August 2009; left program |
| 8. David Arrant | Ph.D | from November 2006: anticipated graduation Dec 2013 |
| 9. Suklima Guha Niyogi | Ph.D. | graduated December 2011 |
| 10. Menzi Mchunu | Ph.D | graduated December 2011 |
| 11. Daniel Caputo | M.S. | graduated May 2010, now at Leiden University |
| 12. Adrian Corman | Ph.D | graduated April 2010, now postdoc at WashU. |
| 13. Josh Tartar | M.S. | became director of astronomy for CPS*, August 2009 |
| 14. Sarah Eyer mann | M.S. | graduated December 2007 |
| 15. Kyle DePew | M.S | graduated May 2006: went on to get PhD at MacQuarie U. |
| 16. Duane Hamacher | M.S | left to go to MacQuarie, Australia January 2006 |

*CPS = Columbia Public Schools

Graduate Advisor for other students

Lanika Ruzhitskaya, Ph. D. School of Information Science and Learning Technologies (SISLT). I was Lanika's co-advisor for her Ph.D. research which involves using computer simulations to improve teaching and learning in astronomy. Lanika graduated in Summer 2011.

Undergraduate Advising

1. Lucie Williams	from May 2013	
2. Lacey Daniels	from May 2013	
3. Matt Reel	from Fall 2012	graduated May 2013
4. Jacob Williams	from Fall 2012	left December 2012
5. Adam Eshein	from Fall 2012	graduated May 2013
6. Colby Lisle	from Fall 2012	
7. Nick Parmley	from Fall 2011	graduated December 2012
8. David Nash	from Fall 2011	graduated May 2013
9. Alex Buffard	from Fall 2011	graduated May 2012
10. Aaron Kaberline	from Summer 2011	Part time for personal reasons
11. Laura Hosmer	from Fall 2010	graduated May 2013
12. Jordan Wheeler	from Fall 2009	graduated May 2012
13. Lucas Miller	from Summer 2009	graduated May 2012
14. Corinne Fletcher	from Summer 2009	graduated May 2011
15. Kyle Williams	from Summer 2009	graduated May 2011
16. Josh Shocklee	from January 2008	graduated December 2010
17. Stephen Messenger	from January 2008	graduated May 2010
18. Alex Mulia	graduated Dec., 2009	grad student at U of Toledo
19. Cindy Randolph	graduated Dec., 2009	now working for textbook company
20. Matthew Taylor	academic year 2007-8	anticipated graduation December 2011
21. Daniel Caputo	graduated May 2008	also earned MU-MS, now PhD student abroad
22. Caleb Wheeler	graduated May 2009	now graduate student at ASU
23. Tikki Davis-Ab Rahim	from September 2006,	left program.
24. Chris Azmeh	from September 2006,	graduated May 2009.
25. Kristina Wakeman	graduated Dec., 2008.	---
26. Anthony Smith	graduated May 2009	now grad student at U of Colorado
27. Josh Tartar	graduated May 2005	joined Army Fall'06, came back as grad student
28. Adrienne Dove	graduated May 2006,	now grad student at U of Colorado
29. Grant Thompson	graduated Dec., 2005,	now grad student at U of Kentucky
30. Karen Wilson	graduated May 2005,	graduate school at Washington U. St Louis
31. R. Bryan Reid	graduated May 2005	---
32. Blake Miller	graduated May 2004,	graduate school at UMKC
33. Danielle Moser	graduated UIUC 2003,	now at NASA Marshall SFC.
34. Melvin Mora	KIA – Iraq June 2004	
*Ben Vega-Westhoff	worked summers before (2006) and after (2007) freshman year at UIUC,	now graduate school at UC-Berkeley
*Emma Myers	summer 2008	high school student (now at U of AZ)
*Julie Wood	summer 2009	high school student
*Jennifer Ortega		advised on career paths in astronomy as undergraduate
*Sarah Bird		advised on career paths in astronomy as undergraduate

CONFERENCES ATTENDED

<i>Conference</i>	<i>Venue</i>	<i>Presentation</i>
IAU Symposium 177: The Carbon Star Phenomenon	Antalya (Turkey) 1996	Poster
From Stardust to Planetesimals	California (USA) 1996	Poster
Astrophysical Implications of the Laboratory Study of Presolar Grains	St. Louis (U.S.A.) 1996	poster ^a

Dust & Molecules in Evolved Stars	Manchester (UK) 1997	Oral
The 60th Meteoritical Society Conference	Hawaii (USA) 1997	--
Chemistry & Physics of Molecules and Grains in Space	Nottingham (UK) 1998	poster ^b
IAU Symposium 191 - AGB Stars	Montpellier (France) 1998	poster ^c
Thermal Emission Spectroscopy of Dust, Disks & Regoliths	Houston (USA) 1999	Oral
IAU Symposium 197 - Astrochemistry	South Korea 1999	poster ^{c,d}
ISO Beyond point sources	Madrid (Spain) 1999	Oral
Presolar Grains etc	St. Louis (U.S.A.) 1999	Oral
4th Tetons NASA Conference	Wyoming (U.S.A.) 2000	Posters
Protoplanetary Nebulae	Torun (Poland) 2000	Oral
The 63rd Meteoritical Society Conference	Chicago, Illinois (U.S.A.) 2000	oral & poster
ISOPHOT Workshop on PHT32 Oversampled Mapping	Madrid (Spain) 2001	Oral
Origin and Evolution of Interstellar Silicates	Leiden (The Netherlands) 2001	oral ^{e,f,h}
Workshop on Presolar Grains	St. Louis (U.S.A.) 2001	Oral
IAU Symposium 209 - Planetary Nebulae	Canberra (Australia) 2001	poster (x3)
AAS meeting	Washington, DC (U.S.A.) 2002	Oral
Lunar & Planetary Science Conference	Houston (U.S.A.) 2002	oral (x2)
Workshop on Pulsating Mass-losing Stars	Sendai (Japan) 2002	Poster ^g
Astrophysics of Dust	Estes Park, CO (U.S.A.) 2003	poster (x3)
Asymmetric Planetary Nebulae III	Mt Rainier, WA (U.S.A.) 2003	oral ^h
Workshop on Cometary Dust in Astrophysics	Mt Rainier, WA (U.S.A.) 2003	oral ^h
Mid-America Regional Astrophysics Conference (MARAC)	Kansas City, MO (U.S.A.) 2003	oral
AAS meeting	Atlanta, GA (U.S.A.) 2004	Poster (x3)
AAS meeting (Winter)	San Diego, CA (U.S.A.) 2005	Poster (x4)
Mid-America Regional Astrophysics Conference (MARAC)	Kansas City, MO (U.S.A.) 2005	oral ^h
AAS meeting (Summer)	Minneapolis, MN (U.S.A.), '05	oral & poster (x4) ^h
Astronomy with Radioactivities V	Clemson, SC (U.S.A), 2005	oral ^h
AAS meeting (Winter)	Washington, DC (U.S.A.) 2006	poster (x8)
IAU Symp. 234: Planetary Nebulae in our Galaxy & Beyond	Waikaloa, HI (U.S.A.) 2006	poster (x3)

Why Galaxies Care About AGB Stars	Vienna (Austria.) 2006	oral & poster (x4) ^g
Asymmetric Planetary Nebulae 4	La Palma (Canary Is.) 2007	poster (x2)
AAS meeting (Winter)	Austin, TX (U.S.A.) 2008	Oral & poster (x6)
IAU Symp. 251: Organic Matter in Space	Hong Kong (China) 2008	Oral ^h
AAS meeting (Summer)	St Louis, MO (U.S.A.) 2008	poster (x7)
Cosmic Dust – Near & Far	Heidelberg (Germany) 2008	poster (x7) ^d
AAS meeting (Winter)	Long Beach, CA (U.S.A) 2009	Oral (x2) & poster
AAS meeting (Summer)	Pasadena, CA (U.S.A) 2009	Oral ^h (x2) & poster (x6)
Towards Understanding Planetary Nebulae: Strategic Research Collaborations	Rochester, NY (U.S.A.) 2009	Oral ^h
AAS meeting (Winter)	Washington, DC (U.S.A) 2010	Oral (x1) & poster (x15)
SouthEast Laboratory Astrophysics Conference (SELAC)	Athens, GA (U.S.A) 2010	Oral ^h
Mid-America Regional Astrophysics Conference (MARAC)	Kansas City, MO (U.S.A) 2010	Oral + 4 student oral
Asymmetrical Planetary Nebulae 5	Bowness-on-wWindermere (U.K.) 2010	Poster
Meteoritical Society Pre-meeting Workshop on Disks, Meteorites, Planetessimals,	New York, NY. (U.S.A.) 2010	Oral ^h
Mid-America Regional Astrophysics Conference (MARAC)	Kansas City, MO (U.S.A) 2011	Oral + 2 student oral
AAS meeting (Winter)	Seattle, WA (U.S.A) 2011	Oral (x2) & poster (x6)
Resolving the Future of Astronomy with Long-Baseline Interferometry	Socorro, NM (U.S.A) 2011	Oral (presented remotely!)
AAS meeting (Summer)	Boston, MA (U.S.A) 2011	Oral ^h , poster (x2)
AAS meeting (Winter)	Austin TX (U.S.A) 2012	Oral (x4), poster (x8)
ASP Science Communication Conference	Tucson, AZ (U.S.A) 2012	Oral (x1), poster (x1)
AAS meeting (Winter)	Long Beach CA (U.S.A) 2013	Oral (x1), poster (x4)
AAS meeting (Summer)	Indianapolis, IN (U.S.A) 2013	Oral (x4), poster (x3)

^aFunds to attend awarded by Washington University

^b Winner of the [Skinner Poster Prize](#)

^cFunds to attend awarded by the IAU

^dFunds to attend awarded by the Royal Society

^eFunds to attend awarded by workshop organizers

^fFunds to attend awarded by AAS

^gFunds to attend awarded by University of Missouri - Columbia's Faculty International Travel Grants

^hInvited talk

ⁱ Took 10 students to this meeting!

^jFunds to attend awards by UGA