

David Emerson Harker

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Education

December, 1999 Ph.D in Physics from the University of Wyoming Advisor: Dr. Charles E. Woodward.
Dissertation title: “Silicate Mineralogy of C/1995 O1 (Hale-Bopp) and its Implications to the Study of Pre-Main Sequence Stars and the Origins of Solar Systems”

June, 1991 B.A. in Physics, University of California at Santa Cruz

Awards and Honors

1999–2002 National Research Council, Research Associateship at NASA Ames Research Center

1996–1999 NASA Graduate Student Research Program Fellow

Research Interests

Dust mineralogy, evolution and radiative transfer in the proto-planetary disks of pre-main sequence stars and solar system comets.

Research Experience

2007–Current: Associate Research Scientist *University of California, San Diego, Center for Astrophysics and Space Sciences* Duties: Astrophysics researcher. Enable research plan by securing funding from outside agencies. Analyze and model the acquired data and write papers for publication in peer reviewed science journals.

2002–2007: Assistant Research Scientist *UC, San Diego, CASS* Duties: Same as above.

1999–2002: NRC Research Associate *NASA Ames Research Center: Supervisor Dr. Diane H. Wooden, ph. 650-604-5522* Duties: Astrophysics researcher. Enable research plan, which includes observations at the NASA Infrared Telescope Facility (IRTF) and the NOAO Gemini 8-m telescopes. Analyze and model the acquired data and write papers for publication in peer reviewed science journals.

1994–1999: Graduate Research Assistant *University of Wyoming: Advisor Dr. Charles E. Woodward, ph. 612-624-0254* Duties: Aid in IR observations at the Wyoming Infrared Observatory (WIRO). Implemented a research plan for thesis work.

1992–1994: Junior Specialist II *University of California, Santa Cruz and NASA/Ames Research Center, Supervisor Dr. Jesse Bregman, ph. 650-604-6136* Duties: Aid in infrared (IR) observations at UCO/Lick Observatory and the NASA Kuiper Airborne Observatory (KAO). Analyze imaging and spectroscopic IR data. Wrote up results for publication in refereed science journals.

1990–1991: Undergraduate Thesis Research *University of California, Santa Cruz with Dr. Jean Brodie*

Teaching Experience

Summer Session Instructor: 2003, 2004: *PHYS 1A (Newtonian Mechanics)*; UCSD

Graduate Teaching Assistant: 1994–1996: *PHYS 1210/1310, PHYS 1220/1320*; *University of Wyoming*

Professional Affiliations

Member of American Astronomical Society and the Division for Planetary Sciences

Oral Presentations

Gemini Science Meeting, Foz do Iguassu, Brazil, July 2007

Winter Meeting of the American Astronomical Society, Washington, D.C, January 2006

Invited Speaker at Protostars and Planet V, Kona, HI, October 28, 2005

CASS Astrophysics Seminar, UCSD, October 7, 2003

Lunar and Planetary Science Conference, Houston, TX, March 2002

Star Formation Workshop, NASA Ames Research Center, September, 2000

Winter Meeting of the American Astronomical Society, dissertation presentation, January 2000

Beobachter-Seminar, Astrophysical Institute, Fredrich-Schiller-Universität, Jena, Germany, November, 1998

Laboratory Group Seminar, Astrophysical Institute, Fredrich-Schiller-Universität, Jena, Germany, November, 1998

Recent Refereed Publications for D.E. Harker

D.E. Harker, C.E. Woodward, D.H. Wooden, “Gemini-N mid-IR observations of the dust properties of the ejecta excavated from Comet 9P/Tempel 1 during Deep Impact,” 2007, *Icarus*, 191, 432.

M.S. Kelley, C.E. Woodward, **D.E. Harker**, et al., “A Spitzer Study of Comets 2P/Encke, 67P/Churyumov-Gerasimenko, and C/2001 HT50 (LINEAR-NEAT).” 2006, *ApJ*, 651, 1256.

D.H. Wooden, S. Desch, **D.E. Harker**, H-P Gail, L. Keller 2006, “Comet Grains and Implications for Heating and Radial Mixing in the Protoplanetary Disk,” in *Protostars and Planets V*, eds. B. Reipurth, D. Jewitt, and K. Keil, (Tucson: University of Arizona Press), in press

D.E. Harker, C.E. Woodward, D.H. Wooden, “The Dust Grains from 9P/Tempel 1 Before and After the Encounter with Deep Impact,” 2005, *Science*, 310, 278.

D.H. Wooden, **D.E. Harker** & A.J. Brearley 2005, “Thermal Processing and Radial Mixing of Dust: Evidence from Comets and Primitive Chondrites,” ASP Conf. Ser. 341: *Chondrites and the Protoplanetary Disk*, 341, 774

D.R. Ciardi, C.M. Telesco, C. Packham, C. Gómez Martin, J.T. Radomski, J.M. De Buizer, C.J. Phillips, & **D.E. Harker**, “Crystalline Silicate Emission in the Protostellar Binary Serpens SVS 20” 2005, *ApJ*, 629, 897

D.E. Harker, C.E. Woodward, D.H. Wooden, P. Temi, “The Disk Atmospheres of Three Herbig Ae/Be Stars,” 2005, *ApJ*, 622, 430.

D.H. Wooden, C.E. Woodward, & **D.E. Harker** “Discovery of Crystalline Silicates in Comet C/2001 Q4 (NEAT)” 2004, *ApJ*, 612, L77

D.E. Harker, D.H. Wooden, C.E. Woodward, C.M. Lisse, “Grain Properties of Comet C/1995 O1 (Hale-Bopp),” 2002, *ApJ*, 580, 579

D.E. Harker, D.H. Wooden, C.E. Woodward 2002, “Crystallinity as an Indicator of Protoplanetary Disk Evolution,” in Debris Disks and the Formation of Planets: A Symposium in Memory of Fred Gillett, held in Tucson, AZ, 11-13 April 2002, ASP Conf. Ser., eds. L. J. Caroff and D. Backman, 324, 211

C.E. Woodward, D.H. Wooden, **D.E. Harker**, K.R. Bell, H.M. Butner, M.L. Sitko, D. Lynch, R. Russell 2002, “The Enigma of DG Tauri,” in Debris Disks and the Formation of Planets: A Symposium in Memory of Fred Gillett, held in Tucson, AZ, 11-13 April 2002, ASP Conf. Ser., eds. L. J. Caroff and D. Backman, 324, 224.

D.E. Harker, S.J. Desch. “Annealing of Silicate Dust by Nebular Shocks at 10 AU,” 2002, *ApJL*, 565, L109

D.H. Wooden, H.A. Butner, **D.E. Harker**, and C.E. Woodward. “Mg-rich Silicate Crystals in Comet Hale-Bopp: ISM Relics or Solar Nebula Condensates?,” 2000, *Icarus*, **143**, 126

D.E. Harker, C.E. Woodward, D.H. Wooden, F.C. Witteborn. “The 10 μm Silicate Feature of C/1996 Q1 (Tabur),” 1999, *AJ*, **118**, 1423

Recent Unrefereed Publications and Presentations

D.E. Harker, C.E. Woodward, D.H. Wooden, R.S. Fisher, & C. Trujillo, 2005, “Temporal Evolution of the Dust Ejected from Comet 9P/Tempel 1 After the Deep Impact Event,” American Astronomical Society Meeting Abstracts, 207, contributed talk

D.E. Harker, C.E. Woodward, D.H. Wooden, S. Fisher, C.A. Trujillo “Mid-IR Observations of Comet 9P/Tempel 1 During the DEEP IMPACT Event Using Gemini-N +MICHELLE,” 2005, AAS/Division for Planetary Sciences Meeting Abstracts, 37.4306

D.E. Harker, C.E. Woodward “Gemini-N Observes Deep Impact,” 2005, Gemini Focus, December, 16-19

C.E. Woodward, M.S. Kelley, **D.E. Harker** et al. “Astromineralogy of Solar System Comets from Spitzer,” 2005, AAS/Division for Planetary Sciences Meeting Abstracts, 37.1616

M.S. Kelley, C.E. Woodward, **D.E. Harker** et al. “A Spectral Survey of Comets with Spitzer,” 2005, American Astronomical Society Meeting Abstracts, 206.3403

D.E. Harker, C.E. Woodward, D.H. Wooden, M.S. Kelley “The Dust Mineralogy of Two Long-Period Comets: C/2001 Q4 (Neat) and C/2002 T7 (Linear),” 2004, American Astronomical Society Meeting Abstracts, 205.5612