

# Andrew M. Davis

## Curriculum Vitae

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**Education:** Grinnell College, Grinnell, Iowa  
B. A. in Chemistry, May, 1971  
Yale University, New Haven, Connecticut,  
M. Phil. in Geochemistry, May, 1973  
Ph. D. in Geochemistry, May, 1977

### Positions held:

1976–1978 Research Associate, Department of the Geophysical Sciences, University of Chicago  
1978–1989 Analytical Chemist, James Franck Institute, University of Chicago  
1985–present Research Associate, Field Museum of Natural History  
1989–1996 Senior Research Associate, Enrico Fermi Institute, University of Chicago  
1997–2006 Senior Scientist, Enrico Fermi Institute, University of Chicago  
1998–2006 Senior Scientist, Department of the Geophysical Sciences, University of Chicago  
2004–present Director, Chicago Center for Cosmochemistry  
2006–present Professor, Department of the Geophysical Sciences, Enrico Fermi Institute, and the College, University of Chicago  
2015–present Chair, Department of the Geophysical Sciences, University of Chicago

### Professional service:

1986–1990 Meteorite Working Group, NASA-NSF  
1991–1993 Lunar and Planetary Geosciences Review Panel, NASA  
1993–1997 Planetary Materials and Geochemistry Management Operations Working Group, NASA  
1994 Planetary Instrument Definition and Development Program Surface Material Analysis Review Panel, NASA  
1995–1996 Program Committee, Lunar and Planetary Science Conference  
1996–2002 Lunar and Planetary Institute Science Council  
1997–1998 Cosmochemistry Review Panel, NASA  
1997–2000 Council, Meteoritical Society  
2000 Co-organizer, 63<sup>rd</sup> Annual Meeting of the Meteoritical Society, held in Chicago in 2000  
2000 Workshop on Laboratory Instrumentation for Analysis of Returned Samples, Chair of Petrology/Geology Panel  
2000–2002 Origins of Solar Systems Review Panel, NASA

2001–2002	Search Committee for Director of the Lunar and Planetary Institute
2001–2007	Editor of Volume 1 (Meteorites, Comets, and Planets) of the <i>Treatise on Geochemistry</i> (Eds. in chief, K. K. Turekian & H. D. Holland), published by Elsevier in 2004; revised electronic version published in 2007
2003	Coconvener, Symposium on <i>Early Solar System Processes</i> , Goldschmidt Conference, Kurashiki, Japan
2003	Genesis Sample Allocation Subcommittee, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA
2003–2004	Cosmochemistry Review Panel, NASA
2003–2011	Cosmochemistry Management Operations Working Group, NASA (Chair 2007–2010)
2003–2006	Nominating Committee, Meteoritical Society
2003–2006	Publications Committee, Meteoritical Society
2004–2013	Chair, Genesis Sample Allocation Subcommittee, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA
2005–2006	International Advisory Board, Nuclei in the Cosmos IX, held in June 2006 at CERN in Geneva
2005–2006	Scientific Organizing Committee, VIII Torino Workshop on Nucleosynthesis in AGB Stars, held February 2006 in Granada, Spain
2005–2013	Member, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA
2005–present	Stardust Sample Oversight Committee, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA
2007–2008	Sample Return Laboratory Instrumentation and Data Analysis Program Review Panel, NASA
2007	Scientific Organizing Committee, Workshop on the Chronology of Meteorites and the Early Solar System, held in November 2007 in Kauai, Hawaii
2008	Coconvener, Symposium on <i>Processes and Timescales in the Solar Nebula</i> , Goldschmidt Conference, Vancouver, Canada
2009	Search Committee for Assistant Curator of Meteorites, Field Museum, Chicago
2009–2012	Audit Committee, Meteoritical Society (chair, 2011–2012)
2009	Cochair, Theme on <i>A Star is Born</i> , Goldschmidt Conference, Davos, Switzerland
2009	Origins of Solar Systems Review Panel, NASA
2009	New Frontiers Science Evaluation Panel, NASA
2010	Coconvener, Symposium on <i>Advances in Analytical Geochemistry</i> , Goldschmidt Conference, Knoxville, TN
2011	Discovery Science Evaluation Panel, NASA
2011	Scientific Organizing Committee, Workshop on Formation of the First Solids in the Solar System, held in November 2011 in Kauai, HI
2012	Johnson Space Center Curation Review Committee, NASA
2012	Cosmochemistry Review Panel, NASA

- 2012 International Advisory Committee, Nuclear Astrophysics Town Meeting 2012, held in October 2012 in Detroit, MI
- 2013–present Joint Publications Committee of the Meteoritical and Geochemical Societies (chair 2016)
- 2015 Program Committee, Meteoritical Society, Berkeley
- 2015 Emerging Worlds Review Panel, NASA
- 2015–2016 Guest Associate Editor, *Geochimica et Cosmochimica Acta*, for a special issue honoring the late Ian D. Hutcheon

### Honors:

- 1992 Fellow, Meteoritical Society
- 2002 Presented Nobel Lecture in Physics in Stockholm, on behalf of Raymond Davis, Jr.
- 2005 Rupert Wildt Lecturer, Yale University
- 2007 Asteroid 1981 ET8 renamed “6947 Andrewdavis”
- 2008 Mineral “davisite” (CaScAlSiO<sub>6</sub>) approved by International Mineralogical Association (Ma C. & Rossman G. R., 2009, Davisite, CaScAlSiO<sub>6</sub>, a new pyroxene from the Allende meteorite, *Amer. Mineral.* 94, 845–848)
- 2013 NASA Group Achievement Award (for work as part of Stardust Interstellar Preliminary Examination Team)

**Professional memberships:** American Association for the Advancement of Science; American Geophysical Union; Geochemical Society; Meteoritical Society

### Mentoring:

*Research staff:* Detlef Rost (Research Scientist, 2010–2015, University of Chicago; presently in Auckland, New Zealand); Thomas Stephan (Senior Research Associate 2007–2014; Senior Scientist, 2014–present, University of Chicago); Reika Yokochi (Research Scientist, 2010–present, University of Chicago)

*Postdocs:* Nicolas Dauphas (now Louis Block Professor at University of Chicago); Jonathan Levine (now Assistant Professor at Colgate University); Kim Knight (now staff member at Lawrence Livermore National Laboratory); Philipp Heck (now Associate Curator of Meteorites at the Field Museum and Associate Professor (Part-Time) at University of Chicago); Ashley King (now postdoc at the Natural History Museum, London); Christoph Burkhardt (coadvised by Nicolas Dauphas; now at University of Münster, Germany); Manavi Jadhav (Visiting Assistant Professor of Physics, University of Louisiana); Patrick Boehnke (current); Levke Kööp (current); Reto Trappitsch (current)

*Graduate students:* Junjun Zhang (PhD 2012, now postdoc at Hong Kong Polytechnic University); Nan Liu (PhD 2014, now postdoc at Carnegie Institution, Department of Terrestrial Magnetism); Levke Kööp (PhD 2016, now postdoc at University of Chicago); Reto Trappitsch (PhD 2016, now postdoc at University of Chicago); Christopher Kelly (MS 2016, now privately employed); current grad students Kristen Villalon, Jennika Greer

*Undergraduate researchers:* Rita Parai (Assistant Professor, Department of Earth and Planetary Sciences, Washington University, St. Louis); Myriam Telus (now postdoc at Carnegie Institution, Department of Terrestrial Magnetism; in Fall, 2017, Assistant Professor, Department of Earth and Planetary Sciences, University of California, Santa Cruz)

**Publications:** 4 edited books; 201 refereed publications; 3 papers submitted or in press; 6 ghost-written refereed papers; 471 meeting abstracts; for details, see <http://scholar.google.com/citations?user=4r-qIHIAAAAJ&hl=en>

### Books

Davis A. M. (ed.) (2004) *Meteorites, Planets, and Comets*, Vol. 1 *Treatise on Geochemistry* (Eds. H. D. Holland and K. K. Turekian), Elsevier-Pergamon, Oxford, 737 p.

Davis A. M. (ed.) (2007) *Meteorites, Planets, and Comets*, Vol. 1 *Treatise on Geochemistry, Electronic Edition* (Eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford, published electronically at <http://www.sciencedirect.com/science/referenceworks/9780080437514>.

Davis A. M. (ed.) (2014) *Meteorites and Cosmochemical Processes*, Vol. 1 *Treatise on Geochemistry, Second Edition* (Eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford, published electronically at <http://www.sciencedirect.com/science/referenceworks/9780080983004#ancv0010>

Davis A. M. (ed.) (2014) *Planets, Asteroids, Comets, and the Solar System*, Vol. 2 *Treatise on Geochemistry, Second Edition* (Eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford, published electronically at <http://www.sciencedirect.com/science/referenceworks/9780080983004#ancv0010>

### Ghostwritten papers

1. Davis R. Jr. (2003) Raymond Davis, Jr. (autobiography). In *Les Prix Nobel 2002*, Nobel Foundation, Stockholm, pp. 54–58.
2. Davis R. Jr. (2003) A half-century with solar neutrinos (Nobel Lecture). In *Les Prix Nobel 2002*, Nobel Foundation, Stockholm, pp. 59–79.
3. Davis R. Jr. (2003) A half-century with solar neutrinos (Nobel Lecture). *ChemPhysChem* **4**, 663–671.
4. Davis R. Jr. (2003) A half-century with solar neutrinos (Nobel Lecture). *Rev. Modern Phys.* **75**, 985–994.
5. Davis R. Jr. (2003) A half-century with solar neutrinos (Nobel Lecture). *Int. Jour. Modern Phys.* **A18**, 3089–3108.
6. Davis R. Jr. (2003) Pól wieku z neutrinami slonecznymi (Nobel Lecture). *Postepy Fizyki* **54**, 191–201 (in Polish).

### Patents

Salzano F. J., Davis A. M., Isaacs H. S. & Newman L. (1973) Sulfur oxide activity measurement. U. S. Patent No. 3718546.

### Refereed papers

1. Salzano F. J., Davis A. M., Isaacs H. S. & Newman L. (1973) Sulfur oxide activity measurement. U. S. Patent No. 3718546.
2. Swenson J. S., Davis A. M., Deyo R. A., Graham B. W., Jahn E. P. & Mattice J. D. (1973) New Lossen rearrangement precursors. The relative rates of rearrangement of nitrophenylbenzhydroxamates in aqueous base. *Jour. Org. Chem.* **38**, 3956–3958.
3. Davis A. M., Ganapathy R. & Grossman L. (1977) Pontlyfni: a differentiated meteorite related to the group IAB irons. *Earth Planet. Sci. Lett.* **35**, 19–24.
4. Davis A. M., Grossman L. & Ganapathy R. (1977) Chemical characterization of a “mysterite”-bearing clast from the Supuhee chondrite. *Geochim. Cosmochim. Acta* **41**, 853–856.

5. Davis A. M., Grossman L. & Ganapathy R. (1977) Yes, Kakangari is a unique chondrite. *Nature* **265**, 230–232.
6. Grossman L., Ganapathy R. & Davis A. M. (1977) Trace elements in the Allende meteorite—III. Coarse-grained inclusions revisited. *Geochim. Cosmochim. Acta* **41**, 1647–1664.
7. Allen J. M., Grossman L., Davis A. M. & Hutcheon I. D. (1978) Mineralogy, textures and mode of formation of a hibonite-bearing Allende inclusion. *Proc. Lunar Planet. Sci. Conf. 9th*, 1209–1233.
8. Davis A. M., Grossman L. & Allen J. M. (1978) Major and trace element chemistry of separated fragments from a hibonite-bearing Allende inclusion. *Proc. Lunar Planet. Sci. Conf. 9th*, 1235–1247.
9. Grossman L., Ganapathy R., Methot R. L. & Davis A. M. (1979) Trace elements in the Allende meteorite—IV. Amoeboid olivine aggregates. *Geochim. Cosmochim. Acta* **43**, 817–829.
10. Davis A. M. & Grossman L. (1979) Condensation and fractionation of rare earths in the solar nebula. *Geochim. Cosmochim. Acta* **43**, 1611–1632.
11. Grossman L., Olsen E., Davis A. M., Tanaka T. & MacPherson G. J. (1981) The Antarctic achondrite ALHA 76005: a polymict eucrite. *Geochim. Cosmochim. Acta* **45**, 1267–1279.
12. Davis A. M., Tanaka T., Grossman L., Lee T. & Wasserburg G. J. (1982) Chemical composition of HAL, an isotopically-unusual Allende inclusion. *Geochim. Cosmochim. Acta* **46**, 1627–1651.
13. Clayton R. N., MacPherson G. J., Hutcheon I. D., Davis A. M., Grossman L., Mayeda T. K., Molini-Velsko C., Allen J. M. & El Goresy A. (1984) Two forsterite-bearing FUN inclusions in the Allende meteorite. *Geochim. Cosmochim. Acta* **48**, 535–548.
14. Ekambaram V., Kawabe I., Tanaka T., Davis A. M. & Grossman L. (1984) Chemical composition of refractory inclusions in the Murchison C2 chondrite. *Geochim. Cosmochim. Acta* **48**, 2089–2105. Ekambaram V., Kawabe I., Tanaka T., Davis A. M. & Grossman L. (1985) Erratum to Ekambaram et al. (1984). *Geochim. Cosmochim. Acta* **49**, 1293. [Contains corrected europium and zirconium data.]
15. Kawabe I., Tanaka T., Ekambaram V., Davis A. M. & Grossman L. (1986) INAA determination of holmium in submilligram samples of cosmochemical and geochemical interest and the second-order activation interference. *Jour. Radioanal. Nucl. Chem.* **102**, 227–238.
16. Hinton R. W., Davis A. M. & Scatena-Wachel D. E. (1987) Large negative  $^{50}\text{Ti}$  anomalies in refractory inclusions from the Murchison carbonaceous chondrite—evidence for incomplete mixing of neutron-rich supernova ejecta into the solar system. *Astrophys. Jour.* **313**, 420–428.
17. Clayton R. N., Hinton R. W. & Davis A. M. (1988) Isotopic variations in the rock-forming elements in meteorites. *Phil. Trans. Royal Soc. Lond.* **A325**, 483–501.
18. Olsen E. J., Davis A. M., Hutcheon I. D., Clayton R. N., Mayeda T. K. & Grossman L. (1988) Murchison xenoliths. *Geochim. Cosmochim. Acta* **52**, 1615–1626.
19. Hinton R. W., Davis A. M., Scatena-Wachel D. E., Grossman L. & Draus R. J. (1988) A chemical and isotopic study of hibonite-rich refractory inclusions in primitive meteorites. *Geochim. Cosmochim. Acta* **52**, 2573–2598.

20. Bryndzia L. T. & Davis A. M. (1989) Liquidus phase relations on the quasi-binary join  $\text{Cu}_2\text{S}-\text{Sb}_2\text{S}_3$ : implications for the formation of tetrahedrite and skinnerite. *Amer. Mineral.* **74**, 236–242.
21. Lu F.-Q., Smith J. V., Sutton S. R., Rivers M. L. & Davis A. M. (1989) Synchrotron X-ray fluorescence analysis of rock-forming minerals. 1. Comparison with other techniques. 2. White-beam energy-dispersive procedure for feldspars. *Chem. Geol.* **75**, 123–143.
22. Kuehner S. M., Davis A. M. & Grossman L. (1989) Identification of relict phases in a once-molten Allende inclusion. *Geophys. Res. Lett.* **8**, 775–778.
23. Davis A. M., Hashimoto A., Clayton R. N. & Mayeda T. K. (1990) Correlated isotopic mass fractionation of oxygen, magnesium and silicon in forsterite evaporation residues. *Nature* **347**, 655–658.
24. Davis A. M., MacPherson G. J., Clayton R. N., Mayeda T. K., Sylvester P. J., Grossman L., Hinton R. W. & Laughlin J. R. (1991) Melt solidification and late-stage evaporation in the evolution of a FUN inclusion from the Vigarano C3V chondrite. *Geochim. Cosmochim. Acta* **55**, 621–637.
25. Simon S. B., Grossman L. & Davis A. M. (1991) Fassaite composition trends during crystallization of Allende Type B refractory inclusion melts. *Geochim. Cosmochim. Acta* **55**, 2635–2655.
26. Gruen D. M., Calaway W. F., Pellin M. J., Young C. E., Spiegel D. R., Clayton R. N., Davis A. M. & Blum J. D. (1991) Selectivity, specificity, and sensitivity in the photoionization of sputtered species. *Nucl. Instr. Methods* **B58**, 505–511.
27. Steele I. M., Olsen E., Pluth J. & Davis A. M. (1991) Occurrence and crystal structure of Ca-free beusite in the El Sarnal IIIA iron meteorite. *American Mineralogist* **76**, 1985–1989.
28. Davis A. M. & Olsen E. J. (1991) Phosphates in pallasite meteorites as probes of mantle processes in small parent bodies. *Nature* **353**, 637–640.
29. Young C. E., Spiegel D. R., Pellin M. J., Calaway W. F., Coon S. R., Gruen D. M., Davis A. M. & Clayton R. N. (1991) Three-colour resonance ionization of sputtered Ti for isotopic analysis of meteoritic samples. *Resonance Ionization Spectroscopy 1990, Institute of Physics Series No. 114*, 435–439.
30. Spiegel D. R., Calaway W. F., Davis A. M., Burnett J. W., Pellin M. J., Coon S. R., Young C. E., Clayton R. N. & Gruen D. M. (1992) Three-color resonance ionization of titanium sputtered from metal and oxides for cosmochemical analyses: measurements of selectivity and isotope anomalies. *Analyt. Chem.* **64**, 469–475.
31. Lu F., Anderson A. T. & Davis A. M. (1992) Melt inclusions and crystal-liquid separation in rhyolitic magma of the Bishop Tuff. *Contrib. Mineral. Petrol.* **110**, 113–120.
32. Campbell A. J., Heinz D. L. & Davis A. M. (1992) Material transport in laser-heated diamond anvil cell melting experiments. *Geophys. Res. Lett.* **19**, 1061–1064.
33. Mittlefehldt D. W., Rubin A. E. & Davis A. M. (1992) Mesosiderite clasts with the most extreme positive europium anomalies among solar system rocks. *Science* **257**, 1096–1099.
34. Loss R., Lugmair G., MacPherson G. J. & Davis A. M. (1992) The nature of the ancient solar nebula: clues from isotopic studies of primitive meteorites. In *Planetary Geosciences 1989–1990* (ed. Zuber M. T., James O. B., Lunine J. I., MacPherson G. J. & Phillips R. J.), pp. 33–34. NASA, Washington, D. C.
35. MacPherson G. J. & Davis A. M. (1993) A petrologic and ion microprobe study of a Vigarano type B2 refractory inclusion: evolution by multiple stages of melting and

- alteration. *Geochim. Cosmochim. Acta* **57**, 231–243. MacPherson G. J. (1993) Erratum to MacPherson & Davis (1993). *Geochim. Cosmochim. Acta* **57**, 1365–1366. [Reprinting of three figures badly printed in the original paper].
36. Moore P. B., Davis, A. M., Van Derveer D. G. & Sen Gupta P. K. (1993) Joesmithite, a plumbous amphibole revisited and comments on bond valences. *Mineralogy and Petrology* **48**, 97–113.
  37. Simon S. B., Kuehner S. M., Davis A. M., Grossman L., Johnson M. L. & Burnett D. S. (1994) Experimental studies of trace element partitioning in Ca-Al-rich compositions: anorthite and perovskite. *Geochim. Cosmochim. Acta* **58**, 1507–1523.
  38. Olsen E., Davis A. M., Clarke R. S. Jr., Schultz L., Weber H. W., Clayton R. N., Mayeda T. K., Jarosewich E., Sylvester P. J., Grossman L., Wang M.-S., Lipschutz M. E., Steele I. M. & Schwade J. (1994) Watson: a new link in the IIE iron chain. *Meteoritics* **29**, 200–213.
  39. Simon S. B., Yoneda S., Grossman L. & Davis A. M. (1994) A  $\text{CaAl}_4\text{O}_7$ -bearing refractory spherule from Murchison: evidence for very high-temperature melting in the solar nebula. *Geochim. Cosmochim. Acta* **58**, 1937–1949.
  40. Spiegel D. R., Calaway W. F., Curlee G. A., Davis A. M., Lewis R. S., Pellin M. J., Gruen D. M. & Clayton R. N. (1994) Three-color and 1+1 resonance ionization mass spectrometry of zirconium sputtered from refractory carbides. *Analyt. Chem.* **66**, 2647–2655.
  41. Loss R. D., Lugmair G. W., MacPherson G. J. & Davis A. M. (1994) Isotopically distinct reservoirs in the solar nebula: isotope anomalies in Vigarano meteorite inclusions. *Astrophys. J.* **436**, L193–L196.
  42. MacPherson G. J. & Davis A. M. (1994) Refractory inclusions in the prototypical CM chondrite, Mighei. *Geochim. Cosmochim. Acta* **58**, 5599–5625.
  43. Foord E. E., Brownfield M. E., Lichte F. E., Davis A. M. & Sutley S. J. (1994) McCrillsite,  $\text{NaCs}(\text{Be},\text{Li})\text{Zr}_2(\text{PO}_4)_4 \cdot 1-2\text{H}_2\text{O}$ , a new mineral species from Mount Mica, Oxford County, Maine, and new data for gainesite. *Canadian Mineralogist* **32**, 839–842.
  44. Foord E. E., Chirnside W., Davis A. M., Lichte F. E. & Esposito K. J. (1995) A new Ca-Ti-Ca-HREE hydrated oxide and associated niobian rutile from Topaz Valley, Juab County, Utah. *Mineral. Record* **26**, 123–128.
  45. Chopin C., Ferraris G., Ivaldi G., Schertl H.-P., Shreyer W., Compagnoni R., Davidson C. & Davis A. M. (1995) Magnesiodumortierite, a new mineral from very-high-pressure rocks (western Alps). II. Crystal chemistry and petrological significance. *Eur. J. Mineral.* **7**, 525–535.
  46. Ma Z., Thompson R. N., Lykke K. R., Pellin M. J. & Davis A. M. (1995) A new instrument for microbeam analysis incorporating submicron imaging and resonance ionization mass spectrometry. *Rev. Scient. Inst.* **66**, 3168–3176.
  47. Lu F., Anderson A. T. & Davis A. M. (1995) Diffusional gradients at the crystal/melt interface and their effect on the composition of melt inclusions. *J. Geol.* **103**, 591–597.
  48. MacPherson G. J., Davis A. M. & Zinner E. K. (1995) The distribution of aluminum-26 in the early solar system—a reappraisal. *Meteoritics* **30**, 365–386.
  49. Heaney P. J. & Davis A. M. (1995) Observation and origin of self-organized textures in agates. *Science* **269**, 1562–1565.
  50. Wallace P. J., Anderson A. T. Jr. & Davis A. M. (1995) Quantification of pre-eruptive exsolved gas contents in silicic magmas. *Nature* **377**, 612–616.

51. Simon S. B., Davis A. M. & Grossman L. (1996) A unique ultrarefractory inclusion from the Murchison meteorite. *Meteoritics Planet. Sci.* **31**, 106–115.
52. Johnson K. E., Davis A. M. & Bryndzia L. T. (1996) Contrasting styles of hydrous metamorphism in the upper mantle: an ion microprobe investigation. *Geochim. Cosmochim. Acta* **60**, 1367–1385.
53. Davis A. M. & MacPherson G. J. (1996) Thermal processing in the solar nebula: constraints from refractory inclusions. In *Chondrules and the Protoplanetary Disk* (ed. Hewins R. H., Jones R. H. & Scott E. R. D.), pp. 71–76. Cambridge Univ. Press.
54. Swindle T. D., Davis A. M., Hohenberg C. M., MacPherson G. J. & Nyquist L. E. (1996) Formation times of chondrules and Ca-Al-rich inclusions: constraints from short-lived radionuclides. In *Chondrules and the Protoplanetary Disk* (ed. Hewins R. H., Jones R. H. & Scott E. R. D.), pp. 77–86. Cambridge Univ. Press.
55. Nicolussi G. K., Pellin M. J., Lykke K. R., Trevor J. L., Mencer D. E. & Davis A. M. (1996) Surface analysis by SNMS: femtosecond laser postionization of sputtered and laser desorbed atoms. *Surface and Interface Analysis* **24**, 363–370.
56. Olsen E. J., Davis A. M., Clayton R. N., Mayeda T. K., Steele I. M. & Moore C. B. (1996) A silicate inclusion in Puente del Zacate, a IIIA iron meteorite. *Science* **273**, 1365–1367.
57. Olsen E. J., Clayton R. N., Mayeda T. K., Davis A. M., Clarke R. S. Jr. & Wasson J. T. (1996) Mbosi: an anomalous iron with unique silicate inclusions. *Meteoritics Planet. Sci.* **31**, 633–639.
58. Liang Y., Richter F. M., Davis A. M. & Watson E. B. (1996) Diffusion in silicate melts: I. Self diffusion in CaO-SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> at 1500°C and 1 GPa. *Geochim. Cosmochim. Acta* **60**, 4353–4367.
59. Simon S. B., Grossman L. & Davis A. M. (1997) Multiple generations of hibonite in spinel-hibonite inclusions from Murchison. *Meteoritics Planet. Sci.* **32**, 259–269.
60. Nicolussi G. K., Pellin M. J., Calaway W. F., Lewis R. S., Davis A. M. & Clayton R. N. (1997) Isotopic analysis of Ca from extraterrestrial, micron size SiC by laser desorption and resonant ionization mass spectrometry. *Analyt. Chem.* **69**, 1140–1146.
61. Nicolussi G. K., Davis A. M., Pellin M. J., Lewis R. S., Clayton R. N. & Amari S. (1997) s-Process zirconium in presolar silicon carbide grains. *Science* **277**, 1281–1283.
62. Rowley D. B., Xue F., Tucker R. D., Peng Z. X., Baker J. & Davis A. M. (1997) Ages of ultrahigh pressure metamorphism and protolith orthogneisses from the Eastern Dabie Shan: U/Pb zircon geochronology. *Earth Planet. Sci. Lett.* **151**, 191–204.
63. Davis A. M. (1997) Cosmochemistry: chemical compositions of meteorites. In *McGraw-Hill Encyclopedia of Science and Technology*, 8th edition, McGraw-Hill, New York.
64. Simon S. B., Davis A. M. & Hutcheon I. D. (1997) Elements, cosmic abundance of. In *McGraw-Hill Encyclopedia of Science and Technology*, 8th edition, McGraw-Hill, New York.
65. Simon S. B., Davis A. M. & Grossman L. (1998) Formation of an unusual compact type A refractory inclusion from Allende. *Meteoritics Planet. Sci.* **33**, 115–126.
66. Sahijpal S., Goswami J. N., Davis A. M., Grossman L. & Lewis R. S. (1998) A stellar origin for the short-lived nuclides in the early solar system. *Nature* **391**, 559–561.
67. Nicolussi G. K., Pellin M. J., Lewis R. S., Davis A. M., Amari S. & Clayton R. N. (1998) Molybdenum isotopic anomalies in individual presolar silicon carbide grains from the Murchison meteorite. *Geochim. Cosmochim. Acta* **62**, 1093–1104.



68. Simon S. B., Davis A. M., Grossman L. & Zinner E. K. (1998) Origin of hibonite-pyroxene spherules. *Meteoritics Planet. Sci.* **33**, 411–424.
69. Bindeman I. N., Davis A. M. & Drake M. J. (1998) Ion microprobe study of plagioclase-basalt partition experiments at natural concentration levels of trace elements. *Geochim. Cosmochim. Acta* **62**, 1175–1193.
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72. Davis A. M., Nicolussi G. K., Pellin M. J., Lewis R. W. & Clayton R. N. (1999) Heavy element isotopic compositions of single circumstellar grains from meteorites: direct measurements of nucleosynthesis products from individual stars. In *Nuclei in the Cosmos V* (ed. N. Prantzos & S. Harissopulos), Editions Frontières, Paris, 563–566.
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#### Abstracts (speaker in boldface)

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