Andrew M. Davis

Curriculum Vitae

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Education: Grinnell College, Grinnell, Iowa
B. A. in Chemistry, 1971

Yale University, New Haven, Connecticut
M. Phil. in Geochemistry, 1973
Ph. D. in Geochemistry, 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–	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–	Director, Chicago Center for Cosmochemistry
2006–	Professor, Department of the Geophysical Sciences, Enrico Fermi Institute, and the College, University of Chicago
2015–2018	Chair, Department of the Geophysical Sciences, University of Chicago

Professional service:

1986–1990	Meteorite Working Group, NASA-NSF
1991–	Proposal review panels, NASA
1993–1997	Planetary Materials and Geochemistry Management Operations Working Group, NASA
1996–2002	Lunar and Planetary Institute Science Council
1997–2000	Council, Meteoritical Society
2000	Co-organizer, 63rd Annual Meeting of the Meteoritical Society, held in Chicago in 2000
2001–2002	Search Committee for Director of the Lunar and Planetary Institute
1995–	International Advisory Boards or Program Committees, international meetings and workshops
2003–2013	Genesis Sample Allocation Subcommittee, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA (Chair 2004–2013)

2003–2011 Cosmochemistry Management Operations Working Group, NASA (Chair 2007–2010)

2003–2006 Nominating Committee, Meteoritical Society

2003–2006 Publications Committee, Meteoritical Society

2005–2013 Curation and Analysis Planning Team for Extraterrestrial Materials, NASA

2005–2015 Stardust Sample Oversight Committee, Curation and Analysis Planning Team for Extraterrestrial Materials, NASA

2009 Search Committee for Assistant Curator of Meteorites, Field Museum, Chicago

2009–2012 Audit Committee, Meteoritical Society (Chair 2011–2012)

2013–2016 Joint Publications Committee of the Meteoritical and Geochemical Societies (chair 2016)

2015–2017 Guest Associate Editor, *Geochimica et Cosmochimica Acta*, Volume 201, a special issue honoring the late Ian D. Hutcheon

2017–2018 Committee on the Review of Progress Toward Implementing the Decadal Survey Vision and Voyages for Planetary Science (planetary science mid-term review), National Academies

2020– External editor for *Proceedings of the National Academy of Sciences*

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" ($CaScAlSiO_6$) approved by International Mineralogical Association (Ma C. & Rossman G. R., 2009, Davisite, $CaScAlSiO_6$, a new pyroxene from the Allende meteorite, *Amer. Mineral.* 94, 845–848)

2013 NASA Group Achievement Award (for work as member of the Stardust Interstellar Preliminary Examination Team)

2018 Squires Lecturer, Grinnell College

2018 Visiting Scholar, Center for Meteorite Studies, Arizona State University

2018 Fellow, American Association for the Advancement of Science

2019 Life Member, American Association for the Advancement of Science

Professional memberships: American Association for the Advancement of Science (life member); American Geophysical Union; Geochemical Society; Meteoritical Society

Mentoring:

Research staff: Detlef Rost (Research Scientist, 2010–2015, University of Chicago; now at University of Auckland, New Zealand); Thomas Stephan (2007–present, Research Professor, University of Chicago); Reika Yokochi (2010–present, Research Professor, University of Chicago); Ruslan Mendybaev (2017–present, Research Professor, University of Chicago); Gerard Olack (2017–present, Research Professional, University of Chicago)

Postdocs: Nicolas Dauphas (2002–2004; Louis Block Professor, University of Chicago); Jonathan Levine (2005–2008; Associate Professor, Colgate University); Kim Knight (2006–2009; staff member, Lawrence Livermore National Laboratory); Philipp Heck (2009–2010; Curator of Meteorites, Field Museum and Professor, Part-Time, University of Chicago); Ashley King (2010–2011; Lecturer, Open University); Christoph Burkhardt (2013–2015; coadvised by Nicolas Dauphas; Associate Professor, University of Münster, Germany); Manavi Jadhav (2014–2015; Assistant Professor of Physics, University of Louisiana at Lafayette); Reto Trappitsch (2016; Assistant Research Professor, Department of Physics, Brandeis University); Levke Kööp (2016–2018; researcher, BASF); Patrick Boehnke (2016–2019; Senior Data Analyst, Relativity, Inc.)

Graduate students: Junjun Zhang (PhD 2012; Hong Kong); Nan Liu (PhD 2014; Research Assistant Professor, Department of Physics, Washington University); Levke Kööp (PhD 2016; researcher, BASF); Reto Trappitsch (PhD 2016; Assistant Research Professor, Department of Physics, Brandeis University); Christopher Kelly (MS 2016; Bruker Optics); Mingen Pan (MS 2019; software engineer intern, Google); current grad students Krysten Villalon (PhD 2021; Postdoc, University of Chicago), Shannon Sheu, Julie Korsmeyer, Hannah Bloom

Undergraduate researchers: Rita Parai (2007–2008; Assistant Professor, Department of Earth and Planetary Sciences, Washington University, St. Louis); Myriam Telus (2008–2009; Assistant Professor, Department of Earth and Planetary Sciences, University of California, Santa Cruz); Olivia Pardo (2016–2017; graduate student, California Institute of Technology); Shannon Sheu (2017–2019; graduate student, University of Chicago); Samantha Baker (2019–present; undergraduate, University of Chicago)

Publications: 4 edited books; 1 NAS report; 226 refereed publications; 2 papers submitted or in press; 6 ghost-written refereed papers; 523 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* (Exec. 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* (Exec. 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* (Exec. Eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford, 453 p., 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* (Exec. Eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford, 414 p., published electronically at http://www.sciencedirect.com/science/referenceworks/9780080983004#ancv0010.

Reports

Prockter L. M., Rothenberg J. H., Bearden D. A., Bolton S., Cohen B. A., Davis A. M., Dyar M. D., Harris A. W., Hendrix A. R., Jakosky B. M., Kivelson M. G., Murchie S. L., Perez-

Mercader J., Saunders M. P., Smrekar S., & Stevenson D. J. (2018) *Visions into Voyages for Planetary Science in the Decade 2013–2022: A Midterm Review*. National Academies Press, Washington, 154 p.

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. 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.
2. 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.
3. 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.
4. Davis A. M., Grossman L. & Ganapathy R. (1977) Yes, Kakangari is a unique chondrite. *Nature* **265**, 230–232.
5. 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.
6. 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.
7. 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.
8. 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.

9. Davis A. M. & Grossman L. (1979) Condensation and fractionation of rare earths in the solar nebula. *Geochim. Cosmochim. Acta* **43**, 1611–1632.
10. 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.
11. 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.
12. 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.
13. 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.]
14. 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.
15. Hinton R. W., Davis A. M. & Scatena-Wachel D. E. (1987) Large negative ^{50}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.
16. 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.
17. 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.
18. 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.
19. Bryndzia L. T. & Davis A. M. (1989) Liquidus phase relations on the quasi-binary join Cu_2S-Sb_2S_3: implications for the formation of tetrahedrite and skinnerite. *Amer. Mineral.* **74**, 236–242.
20. 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.
21. 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.
22. 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.
23. 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.

24. 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.
25. 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.
26. Steele I. M., Olsen E., Pluth J. & Davis A. M. (1991) Occurrence and crystal structure of Ca-free beusite in the El Sampal IIIA iron meteorite. *American Mineralogist* **76**, 1985–1989.
27. Davis A. M. & Olsen E. J. (1991) Phosphates in pallasite meteorites as probes of mantle processes in small parent bodies. *Nature* **353**, 637–640.
28. 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.
29. 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.
30. 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.
31. 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.
32. 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.
33. 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.
34. 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].
35. 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.
36. 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.

37. 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.

38. Simon S. B., Yoneda S., Grossman L. & Davis A. M. (1994) A $CaAl_4O_7$-bearing refractory spherule from Murchison: evidence for very high-temperature melting in the solar nebula. *Geochim. Cosmochim. Acta* **58**, 1937–1949.

39. 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.

40. 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.

41. MacPherson G. J. & Davis A. M. (1994) Refractory inclusions in the prototypical CM chondrite, Mighei. *Geochim. Cosmochim. Acta* **58**, 5599–5625.

42. Foord E. E., Brownfield M. E., Lichte F. E., Davis A. M. & Sutley S. J. (1994) McCrillisite, $NaCs(Be,Li)Zr_2(PO_4)_4 \bullet 1–2H_2O$, a new mineral species from Mount Mica, Oxford County, Maine, and new data for gainesite. *Canadian Mineralogist* **32**, 839–842.

43. Litvinovskii B. A., Zanvilevich A. N., Lyapunov S. M., Bindeman I. N., Davis A. M., & Kalmanovich M. A. (1995) Model of composite-granitoid dike generation (Shaluta Pluton, Transbaikalia). *Russian Geol. Geophys.* **36**, 1–19.

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) 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_2-Al_2O_3 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.

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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.
70. Nicolussi G. K., Pellin M. J., Lewis R. S., Davis A. M., Clayton R. N. & Amari S. (1998) Zirconium and molybdenum in individual circumstellar graphite grains: new isotopic data on the nucleosynthesis of heavy elements. *Astrophys. Jour.* **504**, 492–499.
71. Nicolussi G. K., Pellin M. J., Lewis R. S., Davis A. M., Clayton R. N. & Amari S. (1998) Strontium isotopic composition in individual circumstellar silicon carbide grains: a record of *s*-process nucleosynthesis. *Phys. Rev. Lett.* **81**, 3583–3586.
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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74. Bindeman I. N. & Davis A. M. (1999) Convection and redistribution of alkalis and trace elements during the mingling of basaltic and rhyolite melts. *Petrology* **7**, 91–101.
75. Bindeman I. N., Davis A. M. & Wickham S. M. (1999) 400 Ma of basic magmatism in a single lithospheric block during cratonization: ion microprobe study of plagioclase megacrysts in mafic rocks from Transbaikalia, Russia. *J. Petrol*. **40**, 807–830.
76. Wang J., Davis A. M., Clayton R. N. & Hashimoto A. (1999) Evaporation of single crystal forsterite: Evaporation kinetics, magnesium isotope fractionation, and implications of mass-dependent isotopic fractionation of a diffusion-controlled reservoir. *Geochim. Cosmochim. Acta* **63**, 953–966.
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