

Ho-kwang Mao

Journal Publications

Total citation number: **14,864**, H-index: **64**

Times cited are shown in [blue](#) for 143 selected articles published in *Science* (40 articles), *Nature* (17), *Nature Mat.* (5), or *Phys. Rev. Lett.* (51), or being cited more than 60 times.

Twenty “Most Significant Titles” are marked by ******.

1. Degtyareva, O., E.R. Hernández, J. Serrano, M. Somayazulu, H.K. Mao, E. Gregoryanz, and R.J. Hemley, Vibrational dynamics and stability of the high-pressure chain and ring phases in S and Se, *J. Chem. Phys.*, *126*, 084503, 2007.
2. Ding, Y., R. Ahuja, J. Shu, P. Chow, W. Luo, and H.K. Mao, Structural phase transition of vanadium at 69 GPa, *Phys. Rev. Lett.*, *98*, 085502, 2007. [0](#)
3. Lee, S.K., P.J. Eng, H.K. Mao, Y. Meng, and J. Shu, Structure of alkali borate glasses at high pressure: B and Li K-edge inelastic x-ray scattering study, *Phys. Rev. Lett.*, *98*, 105502, 2007. [0](#)
4. Mao, H.K., and R.J. Hemley, The high-pressure dimension in earth and planetary science, *Proc. Nat. Aca. Sci.*, *104*, 9114–9115, 2007.
5. Okuchi, T., M. Takigawa, J. Shu, H.K. Mao, R.J. Hemley, and T. Yagi, Fast molecular transport in hydrogen hydrates by high-pressure diamond anvil cell NMR, *Phys. Rev. B*, *75*, 144104, 2007
6. Yoshimura, Y., S.T. Stewart, H.K. Mao, and R.J. Hemley, *In situ* Raman spectroscopy of low temperature high pressure transformations of H₂O, *J. Chem. Phys.*, *126*, 10.1063/1.2720830, 2007.
7. Zha, C.-S., R.J. Hemley, S.A. Gramsch, H.K. Mao, and W.A. Bassett, Optical study of H₂O ice to 120 GPa: dielectric function, molecular polarizability, and equation of state, *J. Chem. Phys.*, *126*, 074506, 2007.
8. Ahart, M., A. Asthagiri, P. Dera, H.K. Mao, R.E. Cohen, and R.J. Hemley, Single-domain electromechanical constants for Pb(Zn_{1/3}Nb_{2/3})O₃-4.5%PbTiO₃ from micro-Brillouin scattering, *Appl. Phys. Lett.*, *88*, 042908-1-3, 2006.
9. Ding, Y., P. Chow, and H.-K. Mao, Determining thermal diffuse scattering of vanadium with x-ray transmission scattering, *App. Phys. Lett.*, *88*, 061903-1-3, 2006.
10. Ding, Y., Y. Ren, P. Chow, J. Zhang, S.C. Vogel, B. Winkler, J. Xu, Y. Zhao, and H.K. Mao, Pressure-induced long-range magnetic ordering in cobalt oxide, *Phys. Rev. B*, *74*, 144101, 2006.
11. Gregoryanz, E., C. Sanloup, R. Bini, J. Kreutz, H.J. Jodl, M. Somayazulu, H.K. Mao, and R.J. Hemley, On the ϵ - ζ transition of nitrogen, *J. Chem. Phys.*, *124*, 116102-1-2, 2006
12. Ho, S.S., C.S. Yan, Z. Liu, H.K. Mao, and R.J. Hemley, Prospects for large single crystal CVD diamond, *Industrial Diamond Rev.*, *1/06*, 28-32, 2006.
13. Hu, J.Z., H.K. Mao, J.F. Shu, Q.Z. Guo, and H.Z. Liu, Diamond anvil cell radial x-ray diffraction program at the National Synchrotron Light Source, *J. Phys.: Condens. Matter*, *18*, S1091–S1096, 2006.
14. Li, J., W. Sturhahn, J.M. Jackson, V.V. Struzhkin, J.F. Lin, J. Zhao, H.K. Mao, and G. Shen, Pressure effect on the electronic structure of iron in (Mg,Fe)(Si,Al)O₃ perovskite: a combined synchrotron Mössbauer and X-ray emission spectroscopy study up to 100 GPa, *Phys. Chem. Miner.*, *33*, DOI 10.1007/s00269-006-0105-y, 2006.
15. Liu, H., J.S. Tse, and H.K. Mao, Stability of rocksalt phase of zinc oxide under strong compression: Synchrotron x-ray diffraction experiments and first-principles calculation studies, *J. Appl. Phys.*, *100*, 093509, 2006.
16. Mao, H.K., J. Badro, J. Shu, R.J. Hemley, and A.K. Singh, Strength, anisotropy, and preferred orientation of solid argon at high pressures, *J. Phys.: Condens. Matter*, *18*, S963–S968, 2006.
17. ****** Mao, W.L., H.K. Mao, Y. Meng, P. Eng, M.Y. Hu, P. Chow, Y.Q. Cai, J. Shu, and R.J. Hemley, X-ray-induced dissociation of H₂O and formation of an O₂-H₂ alloy at high pressure, *Science*, *314*, 636-638, 2006. [1](#)

18. ****** Mao, W.L., H.K. Mao, W. Sturhahn, J. Zhao, V.B. Prakapenka, Y. Meng, J. Shu, Y. Fei, and R.J. Hemley, Iron-rich post-perovskite and the origin of ultralow-velocity zones, *Science*, *312*, 564-565, 2006. [9](#)
19. Mao, W.L., H.K. Mao, V.B. Prakapenka, J. Shu, and R.J. Hemley, The effect of pressure on the structure and volume of ferromagnesian post-perovskite, *Geophys. Res. Lett.*, *33*, L12S02, 2006.
20. Mao, W.L., and H.K. Mao, Ultrahigh-pressure experiment with a motor-driven diamond anvil cell, *J. Phys.: Condens. Matter*, *18*, S1069–S1073, 2006.
21. Meng, Y., G. Shen, and H.K. Mao, Double-sided laser heating system at HPCAT for *in situ* x-ray diffraction at high pressures and high temperatures, *J. Phys.: Condens. Matter*, *18*, S1097–S1103, 2006.
22. Meng, Y., R.B. Von Dreele, B.H. Toby, P. Chow, M.Y. Hu, G. Shen, and H.K. Mao, Hard x-ray radiation induced dissociation of N₂ and O₂ molecules and the formation of ionic nitrogen oxide phases under pressure, *Phys. Rev. B*, *74*, 214107, 2006.
23. Merkel, S., A. Kubo, L. Miyagi, S. Speziale, T.S. Duffy, H.K. Mao, and H.-R. Wenk, Plastic deformation of MgGeO₃ post-perovskite at lower mantle pressures, *Science*, *311*, 644-646, 2006. [18](#)
24. Singh, A.K., H.P. Liermann, S.K. Saxena, H.K. Mao, and S.U. Devi, Nonhydrostatic compression of gold powder to 60 GPa in a diamond anvil cell: estimation of compressive strength from x-ray diffraction data, *J. Phys.: Condens. Matter*, *18*, S969–S978, 2006
25. Struzhkin, V.V., H.K. Mao, J.-F. Lin, R.J. Hemley, J.S. Tse, Y. Ma, M.Y. Hu, P. Chow, and C.-C. Kao, Valence band x-ray emission spectra of compressed germanium, *Phys. Rev. Lett.*, *96*, 137402, 2006. [0](#)
26. Yang, L., Y.M. Ma, T. Iitaka, J.S. Tse, K. Stahl, Y. Ohishi, Y. Wang, R.W. Zhang, J.F. Liu, H.K. Mao, and J.Z. Jiang, Pressure-induced phase transformations in the Ba₈Si₄₆ clathrate, *Phys. Rev. B*, *74*, 245209, 2006.
27. Yoshimura, Y., H.K. Mao, and R.J. Hemley, Direct transformation of ice VII' to low-density amorphous ice, *Chem. Phys. Lett.*, *420*, 503–506, 2006.
28. Yoshimura, Y., S.T. Stewart, Maddury Somayazulu, H.K. Mao, and R.J. Hemley, High-pressure x-ray diffraction and Raman spectroscopy of ice VIII, *J. Chem. Phys.*, *124*, 024502-1-7, 2006.
29. Young, A.F., C. Sanloup, E. Gregoryanz, S. Scandolo, R.J. Hemley, and H.K. Mao, Synthesis of novel transition metal nitrides IrN₂ and OsN₂, *Phys. Rev. Lett.*, *96*, 155501, 2006. [12](#)
30. Ahart, M., R.E. Cohen, V. Struzhkin, E. Gregoryanz, D. Rytz, S.A. Prosandeev, H.K. Mao, and R.J. Hemley, High-pressure Raman scattering and x-ray diffraction of the relaxor ferroelectric 0.9Pb(Zn_{1/3}Nb_{2/3})O₃-0.04PbTiO₃, *Phys. Rev. B*, *71*, 144102-1-7, 2005.
31. ****** Cai, Y.Q., H.K. Mao, P.C. Chow, J.S. Tse, Y. Ma, S. Patchkovskii, J.F. Shu, V. Struzhkin, R.J. Hemley, H. Ishii, C.C. Chen, I. Jarrige, C.T. Chen, S.R. Shieh, E.P. Huang, and C.C. Kao, Ordering of hydrogen bonds in high-pressure low-temperature H₂O, *Phys. Rev. Lett.*, *94*, 025502, 2005. [10](#)
32. Chen, X.-J., V.V. Struzhkin, Z. Wu, R.E. Cohen, S. Kung, H.K. Mao, R.J. Hemley, and A.N. Christensen, Electronic stiffness of a superconducting niobium nitride single crystal under pressure, *Phys. Rev. B*, *72*, 094514-1-5, 2005.
33. Chen, X.-J., V.V. Struzhkin, Z. Wu, M. Somayazulu, J. Qian, S. Kung, A.N. Christensen, Y. Zhao, R.E. Cohen, H.K. Mao, and R.J. Hemley, Hard superconducting nitrides, *Proc. Nat. Acad. Sci.*, *102*, 3198-3201, 2005.
34. Degtyareva, O., E. Gregoryanz, M. Somayazulu, P. Dera, H.K. Mao, and R.J. Hemley, Novel chain structures in group VI elements, *Nature Mat.* *4*, 152-155, 2005. [10](#)
35. Degtyareva, O., E. Gregoryanz, M. Somayazulu, H.K. Mao, and R.J. Hemley, Crystal structure of the superconducting phases of S and Se, *Phys. Rev. B*, *71*, 214104, 2005.
36. Degtyareva, O., E. Gregoryanz, H.K. Mao, and R.J. Hemley, Crystal structure of S and Se up to 160 GPa, *High Pressure Res.*, *25*, 17-33, 2005.

37. Degtyareva, V.F., O. Degtyareva, M.K. Sakharov, N.I. Novokhatskaya, P. Dera, H.K. Mao, and R.J. Hemley, Stability of Hume-Rothery phases in Cu–Zn alloys at pressures up to 50 GPa, *J. Phys.: Condens. Matter*, *17*, 7955-7962, 2005.
38. Ding, Y., H. Liu, J. Xu, C.T. Prewitt, R.J. Hemley, and H.K. Mao, Zone-axis diffraction study of pressure induced inhomogeneity in single-crystal Fe_{1-x}O , *Appl. Phys. Lett.*, *87*, 041912, 2005.
39. Ding, Y., J. Xu, C.T. Prewitt, R.J. Hemley, H.K. Mao, J.A. Cowan, J. Zhang, J. Qian, S.C. Vogel, K.A. Lokshin, and Y. Zhao, Variable pressure-temperature neutron diffraction of wüstite Fe_{1-x}O : Absence of long-range magnetic order to 20 GPa, *Appl. Phys. Lett.*, *86*, 052505-1-3, 2005.
40. Ding, Y., H. Liu, M. Somayazulu, Y. Meng, J. Xu, C.T. Prewitt, R.J. Hemley, and H.K. Mao, Zone-axis x-ray diffraction of single-crystal Fe_{1-x}O under pressure, *Phys. Rev. B*, *72*, 174109-1-6, 2005.
41. Feng, Y., M.S. Somayazulu, R. Jaramillo, T.F. Rosenbaum, E.D. Isaacs, J. Hu, and H.K. Mao, Energy dispersive x-ray diffraction of charge density waves via chemical filtering, *Rev. Sci. Instrum.*, *76*, 063913-1-4, 2005.
42. Freiman, Y.A., S.M. Tretyak, H.K. Mao, and R.J. Hemley, Entropy-driven reentrant phase transitions in even-J/odd-J mixtures of linear rotors, *J. Low Temp. Phys.*, *139*, 765-7, 2005.
43. Gavriluk, A.G., V.V. Struzhkin, I.S. Lyubutin, M.Y. Hu, and H.K. Mao, Phase transition with suppression of magnetism in BiFeO_3 at high pressure, *JETP Lett.*, *82*, 224-227, 2005.
44. Goncharov, A.F., V.V. Struzhkin, H.K. Mao, and R.J. Hemley, Spectroscopic evidence for broken-symmetry transitions in dense lithium up to megabar pressures, *Phys. Rev. B*, *71*, 184114, 2005.
45. Gregoryanz, E., O. Degtyareva, M. Somayazulu, R.J. Hemley, and H.K. Mao, Melting of dense sodium, *Phys. Rev. Lett.*, *94*, 185502-1-4, 2005. [14](#)
46. Hemley, R.J., H.K. Mao, and V.V. Struzhkin, Synchrotron radiation and high pressure: new light on materials under extreme conditions, *J. Synch. Rad.*, *12*, 135-154, 2005.
47. Ice, G.E., P. Dera, W. Liu, and H.-k. Mao, Adapting polychromatic X-ray microdiffraction techniques to high-pressure research: energy scan approach, *J. Synch. Rad.*, *12*, 608-617, 2005.
48. Jacobsen, S.D., J.-F. Lin, R.J. Angel, G. Shen, V.B. Prakapenka, P. Dera, H.K. Mao, and R.J. Hemley, Single-crystal synchrotron X-ray diffraction study of wüstite and magnesiowüstite at lower-mantle pressures, *J. Synchrotron Rad.*, *12*, 577-583, 2005.
49. Lee, S.K., P.J. Eng, H.K. Mao, Y. Meng, M. Newville, M.Y. Hu, and J. Shu, Probing of bonding changes in B_2O_3 glasses at high pressure with inelastic X-ray scattering, *Nature Mat.*, *4*, 851-854, 2005. [8](#)
50. Lin, J.-F., V.V. Struzhkin, S.D. Jacobsen, G. Shen, V. Prakepenka, H.K. Mao, and R.J. Hemley, X-ray emission spectroscopy with a laser-heated diamond anvil cell: a new experimental probe of the spin state of iron in the Earth's interior, *J. Synchrotron Rad.*, *12*, 637-641, 2005.
51. Lin, J.-F., E. Gregoryanz, V.V. Struzhkin, M. Somayazulu, H.K. Mao, and R.J. Hemley, Melting behavior of H_2O at high pressures and temperatures, *Geophys. Res. Lett.*, *32*, L11306, 2005.
52. Lin, J.-F., V.V. Struzhkin, S.D. Jacobsen, M.Y. Hu, P. Chow, J. Kung, H. Liu, H.K. Mao, and R.J. Hemley, Spin transition of iron in magnesiowüstite in the Earth's lower mantle, *Nature*, *436*, 377-380, 2005. [32](#)
53. Lin, J.-F., W. Sturhahn, J. Zhao, G. Shen, H.K. Mao, and R.J. Hemley, Sound velocities of hot dense iron: Birch's law revisited, *Science*, *308*, 1892-1894, 2005. [12](#)
54. Lin, T. W., W. Schildkamp, K. Brister, P.C. Doerschuk, M. Somayazulu, H.K. Mao, and J.E. Johnson, The mechanism of high-pressure-induced ordering in a macromolecular crystal, *Acta Cryst.*, *D61*, 737-743, 2005.
55. Liu, H., J. Chen, J. Hu, C.D. Martin, D.J. Weidner, D. Häusermann, and H.K. Mao, Octahedral tilting evolution and phase transition in orthorhombic NaMgF_3 perovskite under pressure, *Geophys. Res. Lett.*, *32*, L04304-1-5, 2005.
56. Liu, H., Y. Ding, M. Somayazulu, J. Qian, J. Shu, D. Häusermann, and H.K. Mao, Rietveld refinement study of the pressure dependence of the internal structural parameter u in the würtzite phase of ZnO , *Phys. Rev. B*, *71*, 212103, 2005.
57. Liu, H., J.S. Tse, J. Hu, Z. Liu, L. Wang, J. Chen, D.J. Weidner, Y. Meng, D. Häusermann, and H.K. Mao, Structural refinement of the high-pressure phase of aluminum trihydroxide: In-situ high-

- pressure angle dispersive synchrotron x-ray diffraction and theoretical studies, *J. Phys. Chem. B*, *109*, 8857-8860, 2005
58. Mao, W.L., V.V. Struzhkin, H.K. Mao, and R.J. Hemley, Pressure-temperature stability of the van der Waals compound $(\text{H}_2)_4\text{CH}_4$, *Chem. Phys. Lett.*, *242*, 66-70, 2005.
 59. Mao, W.L., Y. Meng, G. Shen, V.B. Prakapenka, A.J. Campbell, D.L. Heinz, J. Shu, R. Caracas, R.E. Cohen, Y. Fei, R.J. Hemley, and H.K. Mao, Iron-rich silicates in the Earth's D" layer, *Proc. Nat. Acad. Sci.*, *102*, 9751-9753, 2005.
 60. Merkel, S., J. Shu, P. Gillet, H.K. Mao, and R.J. Hemley, X-ray diffraction study of the single crystal elastic moduli of ϵ -Fe up to 30 GPa, *J. Geophys. Res.*, *110*, B025201-12, 2005.
 61. Mora, A.E., J.W. Steeds, J.E. Butler, C.S. Yan, H.K. Mao, and R.J. Hemley, Direct evidence of interaction between dislocations and point defects in diamond, *phys. stat. sol. (a)*, *202*, R69-R71, 2005.
 62. Okuchi, T., G.D. Cody, H.K. Mao, and R.J. Hemley, Hydrogen bonding and dynamics of methanol by high-pressure diamond anvil cell NMR, *J. Chem. Phys.*, *122*, 244509, 2005.
 63. Okuchi, T., R.J. Hemley, and H.K. Mao, Radio frequency probe with improved sensitivity for diamond anvil cell nuclear magnetic resonance, *Rev. Sci. Instrum.*, *76*, 026111-1-4, 2005.
 64. Shahar, A., W.A. Bassett, H.K. Mao, I-M. Chou, and W.L. Mao, The stability and Raman spectroscopy of ikaite, $\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$, at high pressure and temperature, *Am. Mineral.* *90*, 1835-1839, 2005.
 65. Song, Y., Z. Liu, R.J. Hemley, H.K. Mao, and D.R. Herschbach, High-pressure vibrational spectroscopy of sulfur dioxide, *J. Chem. Phys.*, *122*, 174511, 2005.
 66. Xie, X., M.E. Miniti, M. Chen, H.K. Mao, D. Wang, J. Shu, and Y. Fei, Tuite, a new high-pressure phosphate mineral, *Diqiu Huaxue (Geochimica)*, *32*, 566-5, 2005.
 67. Yang, J., W. Bai, H. Rong, Z. Zhang, Z. Xu, Q. Fang, B. Yang, T. Li, Y. Ren, S. Chen, J. Hu, J. Shu, and H.K. Mao, Discovery of Fe_2P alloy in garnet peridotite from the Chinese Continental Scientific Drilling Project (CCSD) main hole [in Chinese], *Acta Petrologica Sinica*, *21*, 271-276, 2005.
 68. Anand, M., L.A. Taylor, M.A. Nazarov, J. Shu, H.K. Mao, and R.J. Hemley, Space weathering on airless planetary bodies: Clues from the lunar mineral hapkeite, *Proc. Nat. Acad. Sci.*, *101*, 6847-6851, 2004.
 69. Charles, S.J., J.E. Butler, B.N. Feygelson, M.E. Newton, D.L. Carroll, J.W. Steeds, H. Darwish, C.-S. Yan, H.K. Mao, and R.J. Hemley, Characterization of nitrogen doped chemical vapor deposited single crystal diamond before and after high pressure, high temperature annealing, *phys. stat. sol. (a)*, *201*, 2473-2486, 2004.
 70. Chen, X.-J., V.V. Struzhkin, S. Kung, H.K. Mao, R.J. Hemley, and A.N. Christensen, Pressure-induced phonon frequency shifts in transition-metal nitrides, *Phys. Rev. B*, *70*, 014501, 2004.
 71. Chen, X.-J., V.V. Struzhkin, R.J. Hemley, and H.K. Mao, High-pressure phase diagram of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ single crystals, *Phys. Rev. B*, *70*, 214502, 2004.
 72. Eremets, M.I., A.G. Gavriliuk, N.R. Serebryanaya, I.A. Trojan, D.A. Dzivenko, R. Boehler, H.K. Mao, and R.J. Hemley, Structural transformation of molecular nitrogen to a single-bonded atomic state at high pressures, *J. Chem. Phys.*, *121*, 11206-11300, 2004.
 73. Gregoryanz, E., C. Sanloup, M. Somayazulu, J. Badro, G. Fiquet, R.J. Hemley, and H.K. Mao, Synthesis and characterization of a binary noble metal nitride, *Nature Mater.* *3*, 294-297, 2004. [44](#)
 74. Guthrie, M., C.A. Tulk, C.J. Benmore, J. Xu, J.L. Yarger, D.D. Klug, J.S. Tse, H.K. Mao, and R.J. Hemley, Formation and structure of a dense octahedral glass, *Phys. Rev. Lett.*, *93*, 115502-1-4, 2004. [28](#)
 75. Li, J., V.V. Struzhkin, H.K. Mao, J. Shu, R.J. Hemley, Y. Fei, B. Mysen, P. Dera, V.B. Prakapenka, and G. Shen, Electronic spin state of iron in the Earth's lower mantle, *Proc. Nat. Acad. Sci.*, *101*, 14027-14030, 2004.
 76. Lin, J.-F., O. Degtyareva, C.T. Prewitt, P. Dera, N. Sata, E. Gregoryanz, H.K. Mao, and R.J. Hemley, Crystal structure of a high-pressure/high-temperature phase of alumina by *in situ* X-ray diffraction, *Nature Mater.*, *3*, 389-393, 2004. [20](#)

77. Lin, J.-F., Y. Fei, W. Sturhahn, J. Zhao, H.K. Mao, and R.J. Hemley, Magnetic transition and sound velocities of Fe₃S at high pressure: implications for Earth and planetary cores, *Earth Planet. Sci. Lett.*, *226*, 33-40, 2004.
78. Lin, J.-F., B. Militzer, V.V. Struzhkin, E. Gregoryanz, R.J. Hemley, and H.K. Mao, High pressure-temperature Raman measurements of H₂O melting to 22 GPa and 900 K, *J. Chem. Phys.*, *121*, 8423-8427, 2004.
79. Lin, J.-F., M. Santoro, V.V. Struzhkin, H.K. Mao, and R.J. Hemley, *In situ* high pressure-temperature Raman spectroscopy technique with laser-heated diamond anvil cells, *Rev. Sci. Instrum.*, *75*, 3302-3306, 2004.
80. Lin, J.-F., V.V. Struzhkin, H.K. Mao, R.J. Hemley, P. Chow, M. Hu, and J. Li, Magnetic transition in compressed Fe₃C from x-ray emission spectroscopy, *Phys. Rev. B*, *70*, 212405-1-4, 2004.
81. Lin, J.-F., W. Sturhahn, J. Zhao, G. Shen, H.K. Mao, and R.J. Hemley, Absolute temperature measurement in a laser-heated diamond anvil cell, *Geophys. Res. Lett.*, *31*, doi:10.1029/2004GL020599, 2004.
82. Liu, H., J. Hu, J. Shu, D. Häusermann, and H.K. Mao, Lack of the critical pressure for weakening of size-induced stiffness in 3C-SiC nanocrystals under hydrostatic compression, *Appl. Phys. Lett.*, *85*, 1973-1975, 2004
83. Liu, H., J.Z. Hu, J. Xu, Z. Liu, J. Shu, H.K. Mao, and J. Chen, Phase transition and compression behavior of gibbsite under high pressure, *Phys. Chem. Minerals*, *31*, 240-246, 2004.
84. Liu, H., H.K. Mao, M. Somayazulu, Y. Ding, Y. Meng, and D. Häusermann, B1 to B2 phase transition of transition metal monoxide CdO under strong compression, *Phys. Rev. B*, *70*, 094114-1-5, 2004.
85. Liu, Z., J. Xu, H.P. Scott, Q. Williams, H.K. Mao, and R.J. Hemley, Moissaitte (SiC) as windows and anvils for high-pressure infrared spectroscopy, *Rev. Sci. Instrum.*, *75*, 5026-5029, 2004.
86. Lokshin, K.A., Y. Zhao, D. He, W.L. Mao, H.K. Mao, R.J. Hemley, M.V. Lobanov, and M. Greenblatt, Structure and dynamics of hydrogen molecules in the novel clathrate hydrate by high pressure neutron diffraction, *Phys. Rev. Lett.*, *93*, 125503-1-4, 2004. [29](#)
87. Ma, Y., M. Somayazulu, G. Shen, H.K. Mao, J. Shu, R.J. Hemley, In situ X-ray diffraction studies of iron to Earth-core conditions, *Phys. Earth Planet. Inter.* *143-144c*, 455-467, 2004.
88. Mao, W.L., and H.K. Mao, Hydrogen storage in molecular compounds, *Proc. Nat. Acad. Sci.*, *101*, 708-710, 2004.
89. Mao, W.L., W. Sturhahn, D.L. Heinz, H.K. Mao, J. Shu, and R.J. Hemley, Nuclear resonant x-ray scattering of iron hydride at high pressure, *Geophys. Res. Lett.*, *31*, L15618, doi:10.1029/2004GL020541, 2004.
90. Mao, W.L., G. Shen, V.B. Prakapenka, Y. Meng, A.L. Campbell, D.L. Heinz, J. Shu, R.J. Hemley, and H.K. Mao, Ferromagnesian post-perovskite silicates in the D'' layer of the Earth, *Proc. Nat. Acad. Sci.*, *101*, 15867-15869, 2004.
91. Meng, Y., H.K. Mao, P. Eng, T. Trainor, M. Newville, M.Y. Hu, C.C. Kao, D. Häusermann, and R.J. Hemley, BN under compression: the formation of sp³ bonding, *Nature Mater.* *3*, 111-114, 2004. [19](#)
92. Merkel, S., H.-R. Wenk, P. Gillet, H.K. Mao, and R.J. Hemley, Deformation of polycrystalline iron up to 30 GPa and 1000 K, *Phys. Earth Planet. Inter.*, *145*, 239-251, 2004.
93. Papandrew, A.B., A.F. Yue, B. Fultz, I. Halevy, W. Sturhahn, T.S. Toellner, E. Alp, and H.K. Mao, Vibrational modes in nanocrystalline iron under high pressure, *Phys. Rev. B*, *69*, 144301-1-5, 2004.
94. Santoro, M., E. Gregoryanz, H.K. Mao, and R.J. Hemley, New phase diagram of oxygen at high pressure and temperature, *Phys. Rev. Lett.*, *93*, 265701, 2004. [2](#)
95. Santoro, M., J.-F. Lin, H.K. Mao, and R.J. Hemley, In-situ high P-T Raman spectroscopy and laser heating of carbon dioxide, *J. Chem. Phys.*, *121*, 2780-2787, 2004.
96. Scott, H.P., R.J. Hemley, H.K. Mao, D.R. Herschbach, L.E. Fried, W.M. Howard, and S. Bastea, Generation of methane in the Earth's mantle: In situ high pressure-temperature measurements of carbonate reduction, *Proc. Nat. Acad. Sci.*, *101*, 14023-14026, 2004.

97. Shen, G., W. Sturhahn, E.E. Alp, J. Zhao, T.S. Toellner, V.B. Prakapenka, Y. Meng, and H.K. Mao, Phonon density of states in iron at high pressures and high temperatures, *Phys. Chem. Minerals*, *31*, 353-359, 2004.
98. Struzhkin, V.V., R.J. Hemley, and H.K. Mao, New condensed matter probes for diamond anvil cell technology, *J. Phys.: Cond. Matt.*, *16*, S1071-S1086, 2004.
99. Struzhkin, V.V., H.K. Mao, W.L. Mao, R.J. Hemley, W. Sturhahn, E.E. Alp, C. L'Abbe, M.Y. Hu, and D. Errandonea, Phonon densities of states and elastic properties of Fe-based materials under compression, *Hyperfine Interactions*, *153*, 3-15, 2004.
100. Wenk, H.-R., I. Lonardelli, J. Pehl, J. Devine, V. Prakapenka, G. Shen, and H.K. Mao, In situ observation of texture development in olivine, ringwoodite, magnesiowüstite and silicate perovskite at high pressure, *Earth Planet. Sci. Lett.*, *226*, 507- 519, 2004.
101. Xu, J., Y. Ding, S.D. Jacobsen, H.K. Mao, R.J. Hemley, J. Zhang, J. Qian, C. Pantea, S.C. Vogel, D.J. Williams, and Y. Zhao, Powder neutron diffraction of wüstite ($\text{Fe}_{0.93}\text{O}$) to 12 GPa using large moissanite anvils, *High Pressure Res.*, *24*, 247-253, 2004.
102. Xu, J., H.K. Mao, R.J. Hemley, and E. Hines, Large volume high pressure cell with support moissanite anvils, *Rev. Sci. Instrum*, *75*, 006404RSI, 2004.
103. Yan, C.-S., H.K. Mao, W. Li, J. Qian, Y. Zhao, and R.J. Hemley, Ultrahard diamond single crystals from chemical vapor deposition, *phys. stat. sol. (a)*, *201*, R25-R27, 2004.
104. Yoshimura, Y., H.K. Mao, and R.J. Hemley, Transformation of ice in aqueous KCl solution to a high-pressure, low-temperature phase, *Chem. Phys. Lett.*, *40*, 511-514, 2004.
105. Zha, C.-S., H.K. Mao, and R.J. Hemley, Elasticity of dense helium, *Phys. Rev. B*, *70*, 174107-8, 2004.
106. Zhao, J., W. Sturhahn, J.-F. Lin, G. Shen, E.E. Alp, and H.K. Mao, Nuclear resonant scattering at high pressure and high temperature, *High Pressure Res.*, *24*, 447-457, 2004
107. Ablett, J.M., C.C. Kao, S.R. Shieh, H.K. Mao, M. Croft, and T.A. Tyson, High-pressure x-ray near-edge absorption study of thallium rhenium oxide up to 10.86 GPa, *High Pressure Res.*, *23*, 471-476, 2003.
108. Chen, M., J. Shu, H.K. Mao, X. Xie, and R.J. Hemley, Natural occurrence and synthesis of two new post-spinel polymorphs of chromite, *Proc. Natl. Acad. Sci.*, *100*, 14651-14654, 2003.
109. Chen, M., J. Shu, X. Xie, and H.K. Mao, Natural CaTi_2O_4 -structured FeCr_2O_4 polymorph in the Suizhou meteorite and its significance in mantle mineralogy, *Geochim. Cosmochim. Acta*, *67*, 3937-3942, 2003.
110. Eremets, M.I., V.V. Struzhkin, H.K. Mao, and R.J. Hemley, Exploring superconductivity in low-Z materials at megabar pressures, *Physica B*, *329*, 1312-1316, 2003.
111. Errandonea, E., M. Somayazulu, D. Hausermann, and H.K. Mao, Melting of tantalum at high pressure determined by angle dispersive x-ray synchrotron diffraction in a double-sided laser-heated diamond-anvil cell, *J. Phys.: Cond. Matt.* *15*, 7635-7649, 2003.
112. Goncharov, A. F., E. Gregoryanz, R. J. Hemley, and H. K. Mao, Molecular character of the metallic high-pressure phase of oxygen, *Phys. Rev. B*, *68*, 100102, 2003.
113. Gregoryanz, E., A.F. Goncharov, K. Matsuishi, H.K. Mao, and R.J. Hemley, Raman spectroscopy of hot dense hydrogen, *Phys. Rev. Lett.*, *90*, 175701-1-4, 2003. [24](#)
114. Gregoryanz, E., R. J. Hemley, H. K. Mao, and R. E. Cohen, High pressure elasticity of alpha-quartz: Instability and ferroelastic transition, Reply to Comment by M. Müser and P. Schöffel, *Phys. Rev. Lett.*, *90*, 079702, 2003. [8](#)
115. He, D., Y. Zhao, T.D. Sheng, R.B. Schwartz, J. Qian, K.A. Lokshin, S. Bobev, L.L. Daemen, H.K. Mao, J.Z. Hu, J. Shu, and J. Xu, Bulk metallic glass gasket for high pressure, in situ x-ray diffraction, *Rev. Sci. Instrum.* *74*, 3012-3016, 2003.
116. Hellwig, H., A. F. Goncharov, H. K. Mao, E. Gregoryanz, and R. J. Hemley, Brillouin and Raman spectroscopy of the ferroelastic rutile-to- CaCl_2 transition in SnO_2 at high pressure, *Phys. Rev. B*, *67*, 174110, 2003.
117. Hemley, R.J., Z. Liu, E. Gregoryanz, and H.K. Mao, Infrared and Raman microspectroscopy of minerals under pressure, *Microscro. Microanal.*, *9(Suppl 2)*, 1098, 2003.

118. Li, J., C. Hadidiacos, H.K. Mao, Y. Fei, and R. J. Hemley, Behavior of thermocouples under high pressures in a multianvil apparatus, *High Pressure Res.* **23**, 389-401, 2003.
119. Lin, J.F., J. Shu, H.K. Mao, R.J. Hemley, and G. Shen, Amorphous boron gasket in diamond anvil cell research, *Rev. Sci. Instrum.*, **74**, 4732-4736, 2003.
120. Lin, J.F., D.L. Heinz, H.K. Mao, R.J. Hemley, J.M. Devine, J. Li, and G. Shen, Stability of magnesiowüstite in Earth's lower mantle, *Proc. Nat. Acad. Sci.*, **100**, 4405-4408, 2003.
121. Lin, J.F., V.V. Struzhkin, W. Sturhahn, E. Huang, J. Zhao, M.Y. Hu, E.E. Alp, H.K. Mao, N. Boctor, and R.J. Hemley, Sound velocities of iron-nickel and iron-silicon alloys at high pressures, *Geophys. Res. Lett.* **30**, 10.1029/2003GL018405, 2003.
122. Ma, Y., C.T. Prewitt, G. Zou, H.K. Mao, and R.J. Hemley, High-pressure high-temperature x-ray diffraction of β -boron to 30 GPa, *Phys. Rev. B*, **67**, 174116, 2003.
123. **Mao, W.L., H.K. Mao, P. Eng, T. Trainor, M. Newville, C.C. Kao, D.L. Heinz, J. Shu, Y. Meng, and R.J. Hemley, Bonding changes in compressed superhard graphite, *Science* **302**, 425-427, 2003. [30](#)
124. Mao, W.L., H.K. Mao, C.S. Yan, J. Shu, J.Z. Hu, and R.J. Hemley, Generation of ultrahigh pressures using single-crystal chemical vapor deposition diamond anvils, *Appl. Phys. Lett.*, **83**, 5190-5192, 2003
125. Matsuishi, K., E. Gregoryanz, H.K. Mao, and R.J. Hemley, Equation of state and intermolecular interactions in fluid hydrogen from Brillouin scattering at high pressures and temperatures, *J. Chem. Phys.*, **118**, 10683-10695, 2003.
126. Meng, Y., M. Newville, S. Sutton, J. Rakovan, and H.K. Mao, Fe and Ni impurities in synthetic diamond, *Am. Mineral.* **88**, 1555-1559, 2003.
127. Merkel, S., H.R. Wenk, J. Badro, G. Montagnac, P. Gillet, H.K. Mao, and R.J. Hemley, Deformation of $(\text{Mg}_{0.9}\text{Fe}_{0.1})\text{SiO}_3$ perovskite aggregates up to 32 GPa, *Earth Planet. Sci. Lett.*, **209**, 351-360, 2003.
128. Song, Y., R.J. Hemley, H.K. Mao, Z. Liu, M. Somayazulu, and D.R. Herschbach, High-pressure stability, transformations, and vibrational dynamics of nitrosonium nitrate from synchrotron infrared and Raman spectroscopy, *J. Chem. Phys.* **119**, 2232-2240, 2003.
129. Song, Y., M. Somayazulu, H.K. Mao, R.J. Hemley, and D.R. Herschbach, High-pressure structure and equation of state study of nitrosonium nitrate from synchrotron x-ray diffraction, *J. Chem. Phys.* **118**, 8350-8356, 2003.
130. Song, Y., R.J. Hemley, H.K. Mao, Z. Liu, and D.R. Herschbach, New phases of N_2O_4 at high pressures and high temperatures, *Chem. Phys. Lett.*, **382**, 686-693, 2003.
131. Wang, Z., Y. Zhao, D. Schiferl, R.T. Downs, H.K. Mao, and T. Sekine, Threshold pressure for disappearance of size-induced effect in spinel-structure Ge_3N_4 nanocrystal, *J. Phys. Chem. B*, **109**, 14151-14153, 2003.
132. Badro, J., G. Fiquet, V.V. Struzhkin, M. Somayazulu, H.K. Mao, G. Shen, and T. LeBihan, Nature of the high-pressure transition in Fe_2O_3 hematite, *Phys. Rev. Lett.*, **89**, 205504, 2002. [25](#)
133. Gregoryanz, E., A.F. Goncharov, R.J. Hemley, H.K. Mao, M. Somayazulu, and G.Y. Shen, Raman, infrared, and x-ray evidence for new phases of nitrogen at high pressures and temperatures, *Phys. Rev. B*, **66**, 224108, 2002.
134. Gregoryanz, E., V.V. Struzhkin, R.J. Hemley, M.I. Erements, H.K. Mao, and Y.A. Timofeev, Superconductivity in the chalcogens up to multimegabar pressures, *Phys. Rev. B*, **65**, 064504, 2002.
135. Guo, Q., H.K. Mao, J. Hu, J. Shu, and R.J. Hemley, The phase transitions of CoO under static pressure to 104 GPa, *J. Phys.: Condens. Matter*, **14**, 11369-11374, 2002.
136. Hemley, R.J., and H.K. Mao, New window on earth and planetary interiors, *Mineral. Mag.*, **66**, 791-811, 2002.
137. Hofmeister, A.M., and H.K. Mao, Redefinition of the mode Grüneisen parameter for polyatomic substances and thermodynamic implications, *Proc. Nat. Acad. Sci.*, **99**, 559-564, 2002.
138. Hu, J., J. Xu, M. Somayazulu, Q. Guo, R.J. Hemley, and H.K. Mao, X-ray diffraction and laser heating: application of moissanite anvil cell, *J. Phys.: Condens. Matter*, **14**, 10479-10481, 2002.
139. Li, J., H.K. Mao, Y. Fei, E. Gregoryanz, M. Erements, and C.S. Zha, Compression of Fe_3C to 30 GPa at room temperature, *Phys. Chem. Minerals*, **29**, 166-169, 2002.

140. Liu, Z., J. Hu, H. Yang, H.K. Mao, and R.J. Hemley, High-pressure synchrotron x-ray diffraction and infrared microspectroscopy: applications to dense hydrous phases, *J. Phys.: Condens. Matter*, *14*, 10641-10646, 2002.
141. Luo, W., Y.Z. Ma, G.T. Zou, H.K. Mao, Z.C. Wang, and Y. Wang, High-pressure synchrotron studies on TiO₂-II nanocrystallite doped with SnO₂, *J. Phys.: Condens. Matter*, *14*, 11069-11075, 2002.
142. Mao, W., J. Shu, J. Hu, R.J. Hemley, and H.K. Mao, Displacive transition in magnesiowüstite, *J. Phys.: Condens. Matter*, *14*, 11349-11354, 2002.
143. ***Mao, W.L., H.K. Mao, A.F. Goncharov, V.V. Struzhkin, Q. Guo, J. Hu, J. Shu, R.J. Hemley, M. Somayazulu, and Y. Zhao, Hydrogen clusters in clathrate hydrate, *Science*, *297*, 2247-2249, 2002. [77](#)
144. Matsuishi, K., E. Gregoryanz, H.K. Mao, and R.J. Hemley, Brillouin and Raman scattering of fluid and solid hydrogen at high pressures and temperatures, *J. Phys.: Condens. Matter*, *14*, 10631-10636, 2002.
145. Merkel, S., A.P. Jephcoat, J. Shu, H.K. Mao, P. Gillet, and R.J. Hemley, Equation of state, elasticity and shear strength of pyrite under high pressure, *Phys. Chem. Minerals*, *29*, 1-9, 2002.
146. Merkel, S., H.R. Wenk, J. Shu, G. Shen, P. Gillet, H.K. Mao, and R.J. Hemley, Deformation of polycrystalline MgO at pressures of the lower mantle, *J. Geophys. Res.*, *107*, doi:10.1029/2001JB000920, 2002.
147. Nakano, S., R.J. Hemley, E. Gregoryanz, A.F. Goncharov, and H.K. Mao, Pressure-induced transformations of molecular boron hydride, *J. Phys.: Condens. Matter*, *14*, 10453-10456, 2002.
148. Sanloup, C., H.K. Mao, and R.J. Hemley, High-pressure transformations in xenon hydrates, *Proc. Nat. Acad. Sci.*, *99*, 25-28, 2002.
149. Sanloup, C., H.K. Mao, and R.J. Hemley, Evidence for xenon silicates at high pressure and temperature, *Geophys. Res. Lett.*, *29*, 10.1029/2002GL014973, 2002.
150. Struzhkin, V.V., M.I. Eremets, W. Gan, H.K. Mao, and R.J. Hemley, Superconductivity in dense lithium, *Science*, *298*, 1213-1215, doi:10.1126/science.1078535, 2002. [60](#)
151. Strzhemechny, M.A., R.J. Hemley, H.K. Mao, A.F. Goncharov, and J.H. Eggert, Ortho-para conversion of hydrogen at high pressures, *Phys. Rev. B*, *66*, 014103 (1-18), 2002.
152. Timofeev, Y.A., V.V. Struzhkin, R.J. Hemley, H.K. Mao, and E.A. Gregoryanz, Improved techniques for measurement of superconductivity in diamond anvil cells by magnetic susceptibility, *Rev. Sci. Instrum.*, *73*, 371-377, 2002.
153. Xie, X., M.E. Miniti, M. Chen, H.K. Mao, D. Wang, J. Shu, and Y. Fei, Natural high-pressure polymorph of merrillite in the shock veins of the Suizhou meteorite, *Geochim. Cosmochim. Acta*, *66*, 2439-2444, 2002.
154. Xu, J., H.K. Mao, and R.J. Hemley, The gem anvil cell: high-pressure behavior of diamond and related materials, *J. Phys.: Condens. Matter*, *14*, 11549-11552, 2002.
155. Xu, J., H.K. Mao, R.J. Hemley, and E. Hines, The moissanite anvil cell: a new tool for high-pressure research, *J. Phys.: Condens. Matter*, *14*, 11543-11548, 2002.
156. Yan, C.-s., Y.K. Vohra, H.K. Mao, and R.J. Hemley, Very high growth rate chemical vapor deposition of single-crystal diamond, *Proc. Nat. Acad. Sci.*, *99*, 12523-12525, 2002.
157. Zhao, J.Y., T.S. Toellner, M.Y. Hu, W. Sturhahn, E.E. Alp, G.Y. Shen, and H.K. Mao, High-energy-resolution monochromator for ⁸³Kr nuclear resonant scattering, *Rev. Sci. Instrum.*, *73*, 1608-1610, 2002.
158. Eremets, M.I., V.V. Struzhkin, R.J. Hemley and H.K. Mao, Superconductivity in boron, *Science*, *293*, 272-274, 2001. [61](#)
159. Eremets, M.I., R.J. Hemley, H.K. Mao and E. Gregoryanz, Semiconducting non-molecular nitrogen up to 240 GPa and its low-pressure stability, *Nature*, *411*, 170-174, 2001. [74](#)
160. Feldman, J.L., J.H. Eggert, H.K. Mao, and R.J. Hemley, Computations of vibron excitations and Raman spectra of solid hydrogens, *J Low Temp. Phys.*, *122* (3/4), 389-399, 2001.

161. Goncharov, A.F., E. Gregoryanz, R.J. Hemley, and H.K. Mao, Spectroscopic studies of the vibrational and electronic properties of solid hydrogen to 285 GPa, *Proc. Nat. Acad. Sci.*, *98* (25), 14234-14237, 2001.
162. Goncharov, A.F., E. Gregoryanz, H.K. Mao and R.J. Hemley, Vibrational dynamics of solid molecular nitrogen to megabar pressures, *Low Temp. Phys.*, *27*, 866-869, 2001
163. Goncharov, A.F., V.V. Struzhkin, E. Gregoryanz, J. Hu, R.J. Hemley, H.K. Mao, G. Lapertot, S.L. Bud'ko and P.C. Canfield, Raman spectrum and lattice parameters of MgB₂ as a function of pressure, *Phys. Rev. B, Rapid Comm.*, *64*, 100509(R), 2001.
164. Goncharov, A.F., M.A. Strzhemechny, H.K. Mao and R.J. Hemley, The low-frequency Raman spectra in phase I of solid H₂: Role of crystal fields, *Phys. Rev. B*, *63*, 64304-8, 2001.
165. Gregoryanz, E., A.F. Goncharov, R.J. Hemley and H.K. Mao, High-pressure amorphous nitrogen, *Phys. Rev. B*, *64*, 052103, 2001.
166. Hellwig, H., W.B. Daniels, R.J. Hemley, H.K. Mao, and E. Gregoryanz, Coherent anti-Stokes Raman scattering spectroscopy of solid nitrogen to 22 GPa, *J. Chem. Phys.*, *115* (23), 10876-10882, 2001.
167. Hemley, R.J. and H.K. Mao, In-situ studies of iron under pressure: New windows on the Earth's core, *Intern. Geol. Rev.*, *43*, 1-30, 2001.
168. Hemley, R.J., and H.K. Mao, Progress in cryocrystals at megabar pressures, *J Low Temp. Phys.*, *122* (3/4), 331-344, 2001.
169. Hofmeister, A.M. and H.K. Mao, Evaluation of shear moduli and other properties of silicates with the spinel structure from IR spectroscopy, *Am. Mineral.*, *86*, 622-639, 2001.
170. Klehe, A.-K., R.D. McDonald, J. Singleton, A. Kleppe, H. Olijnyk, A.P. Jephcoat, A.F. Goncharov, V.V. Struzhkin, H.K. Mao, R.J. Hemley, and T. Sasaki, Raman scattering and infrared reflectivity of κ-(ET)₂Cu(SCN)₂ under pressure, *Synthetic Metals*, *120*, 857-858, 2001.
171. Li, J., Y. Fei, H.K. Mao, K. Hirose, and S.R. Shieh, Sulfur in the Earth's inner core, *Earth Planet. Sci. Lett.*, *193*, 509-514, 2001.
172. Ma, Y., H.K. Mao, R.J. Hemley, G. Shen, and M. Somayazulu, Two dimensional energy dispersive x-ray diffraction at high pressures and temperatures, *Rev. Sci. Instrum.*, *72* (2), 1302-1305, 2001.
173. Mao, H.K., C. Kao, and R.J. Hemley, Inelastic x-ray scattering at ultrahigh pressures, *J. Phys.: Condensed Matter*, *13*, 7847-7858, 2001.
174. **Mao, H.K., J. Xu, V.V. Struzhkin, J. Shu, R.J. Hemley, W. Sturhahn, M. Hu, E. Alp, L. Vocadlo, D. Alfè, G.D. Price, M.J. Gillan, M. Schwoerer-Böhning, D. Häusermann, P. Eng, G. Shen, H. Giefers, R. Lübbbers, and G. Wortmann, Phonon density of states of iron up to 153 GPa, *Science*, *292*, 914-916, 2001. [87](#)
175. Matsuishi, K., T. Suzuki, S. Onari, E. Gregoryanz, R.J. Hemley, and H.K. Mao, Excitonic states of alkylammonium lead-iodide layered perovskite semiconductors under hydrostatic pressure to 25 GPa, *phys. stat. sol.*, *223*, 177-182, 2001.
176. Matthies, S., S. Merkel, H.R. Wenk, R.J. Hemley, and H.K. Mao, Effect of texture on the determination of elasticity of polycrystalline ε-iron from diffraction measurements, *Earth Planet. Sci. Lett.*, *194*, 201-212, 2001.
177. Soignard, E., M. Somayazulu, H.K. Mao, J.J. Dong, O.F. Sankey, and P.F. McMillan, High pressure-high temperature investigation of the stability of nitride spinels in the system Si₃N₄-Ge₃N₄, *Solid State Comm.*, *120* (5-6), 237-242, 2001.
178. Somayazulu, M., A. Madduri, A.F. Goncharov, O. Tschauner, P.F. McMillan, H.K. Mao, and R.J. Hemley, Novel broken symmetry phase from N₂O at high pressures and high temperatures, *Phys. Rev. Lett.*, *87* (13), 135504, 2001. [19](#)
179. Speziale, S., C.S. Zha, T.S. Duffy, R.J. Hemley, and H.K. Mao, Quasihydrostatic compression of magnesium oxide to 52 GPa: implications for the pressure-volume-temperature equation of state, *J. Geophys. Res.*, *106* (B1), 515-528, 2001. [70](#)

180. Struzhkin, V.V., H.K. Mao, J. Hu, M. Schwoerer-Böhning, J. Shu, R.J. Hemley, W. Sturhahn, M.Y. Hu, E.E. Alp, P. Eng, and G. Shen, Nuclear inelastic x-ray scattering in FeO to 48 GPa, *Phys. Rev. Lett.*, *87* (25), 255501-1-4, 2001. [17](#)
181. Struzhkin, V.V., A.F. Goncharov, R.J. Hemley, H.K. Mao, G. Lapertot, S.L. Bud'ko, and P.C. Canfield, Phonon-assisted electronic topological transition in MgB₂ under pressure, *J. Phys.: Condens. Matter*, *27*, 0106576, 2001.
182. Tschauer, O., H.K. Mao, and R.J. Hemley, New transformations of CO₂ at high pressures and temperatures, *Phys. Rev. Lett.*, *87* (7), 075701, 2001. [6](#)
183. Zou, G.T., Y. Ma, H.K. Mao, R.J. Hemley, and S. Gramsch, A diamond gasket for the laser-heated diamond anvil cell, *Rev. Sci. Instrum.*, *72* (2), 1298-1301, 2001
184. Carpenter, M.A., R.J. Hemley and H.K. Mao, High-pressure elasticity of stishovite and the P4₂/mmm - Pnm phase transition, *J. Geophys. Res.*, *105*, 10807-10816, 2000.
185. Chou, I.-M., A. Sharma, R.C. Burruss, J. Shu, H.K. Mao, R.J. Hemley, A.F. Goncharov, L. A. Stern and S. H. Kirby, New methane hydrates, *Proc. Natl. Acad. Sci.*, *97*, 13484-13487, 2000.
186. Eremets, M.I., E. Gregoryanz, V.V. Struzhkin, H.K. Mao, R.J. Hemley, N. Moulders and N.M. Zimmerman, Electrical conductivity of xenon at megabar pressures, *Phys. Rev. Lett.*, *85*, 2797-2800, 2000. [32](#)
187. Goncharov, A.F., E. Gregoryanz, H.K. Mao, Z. Liu and R.J. Hemley, Optical evidence for a nonmolecular phase of nitrogen above 150 GPa, *Phys. Rev. Lett.*, *85*, 1262-1265, 2000. [63](#)
188. Gregoryanz, E., R.J. Hemley, H.K. Mao and P. Gillet, High-pressure elasticity of α -quartz: Instability and ferroelastic transition, *Phys. Rev. Lett.*, *84*, 3117-3120, 2000. [21](#)
189. Hemley, R.J., H.K. Mao and S.A. Gramsch, Pressure-induced transformations in deep mantle and core minerals, *Eur. J. Min.*, *64*, 157-184, 2000.
190. Hemley, R.J., J. Shu, M.A. Carpenter, J. Hu, H.K. Mao and K.J. Kingma, Strain-order parameter coupling in the ferroelastic transition in dense SiO₂, *Solid State Comm.*, *114*, 527-532, 2000.
191. Kagi, H., R. Lu, P.M. Davidson, A.F. Goncharov, H.K. Mao and R.J. Hemley, Evidence for ice VI as an inclusion of cuboid diamonds from high P-T near infrared spectroscopy, *Min. Mag.*, *64*, 1089-1097, 2000.
192. Klehe, A.-K., R.D. McDonald, A.F. Goncharov, V.V. Struzhkin, H.K. Mao, R.J. Hemley, T. Sasaki, W. Hayes and J. Singleton, Infrared studies of the organic superconductor κ -(BEDT-TTF)₂Cu(SCN)₂ under pressure, *J. Phys.: Condens. Matter*, *12*, L247-L256, 2000.
193. Merkel, S., A.F. Goncharov, H.K. Mao, P. Gillet and R.J. Hemley, Raman spectroscopy of iron to 152 gigapascals: Implications for Earth's inner core, *Science*, *288*, 1626-1629, 2000. [41](#)
194. Shieh, S.R., H.K. Mao, R.J. Hemley and L.C. Ming, In-situ X-ray diffraction of dense hydrous magnesium silicates at mantle conditions, *Earth Planet. Sci. Lett.*, *177*, 69-80, 2000.
195. Shieh, S.R., H.K. Mao, J. Konzett and R.J. Hemley, In-situ high pressure X-ray diffraction of phase E to 15 GPa, *Am. Mineralogist*, *85*, 765-769, 2000.
196. Sobolev, N.V., B.A. Fursenko, S.V. Goryainov, J. Shu, R.J. Hemley and H.K. Mao, Fossilized high pressure from the Earth's deep interior: The coesite-in-diamond barometer, *Proc. Nat. Acad. Sci.*, *97*, 11875-11879, 2000.
197. Struzhkin, V.V., R.J. Hemley, H.K. Mao, Y.A. Timofeev and M.I. Eremets, Electronic and magnetic studies of materials to megabar pressures, *Hyperfine Interactions*, *128*, 323-343, 2000.
198. Struzhkin, V.V., A.F. Goncharov, H.K. Mao, R.J. Hemley, S.W. Moore, J.M. Graybeal, J. Sarrao and Z. Fisk, Coupled magnon-phonon excitations in Sr₂CuCl₂O₂ at high pressure, *Phys. Rev. B*, *62*, 3895-3899, 2000.
199. Wenk, H.-R., S. Matthies, R.J. Hemley, H.K. Mao and J. Shu, The plastic deformation of iron at pressures of the Earth's inner core, *Nature*, *405*, 1044-1047, 2000. [56](#)
200. Xu, J.-A. and H.K. Mao, Moissanite: A new window for high-pressure experiments, *Science*, *290*, 783-785, 2000. [38](#)

201. Zha, C.-S., H.K. Mao and R.J. Hemley, Elasticity of MgO and a primary pressure scale to 55 GPa, *Proc. Natl. Acad. Sci.*, *97*, 13494-13499, 2000. [97](#)
202. Badro, J., V.V. Struzhkin, J. Shu, R.J. Hemley, H.K. Mao, C.C. Kao, J.-P. Rueff and G. Shen, Magnetism in FeO at megabar pressures from x-ray emission spectroscopy, *Phys. Rev. Lett.*, *83*, 4101-4104, 1999. [50](#)
203. Conrad, P.G., C.S. Zha, H.K. Mao and R.J. Hemley, The high pressure, single-crystal elasticity of pyrope, grossular, and andradite, *Am. Mineral.*, *84*, 374-383, 1999.
204. Duffy, T.S., G. Shen, D.L. Heinz, J. Shu, Y. Ma, H.K. Mao, R.J. Hemley and A.K. Singh, Lattice strains in gold and rhenium under non-hydrostatic compression to 37 GPa, *Phys. Rev. B*, *60*, 15063-15073, 1999. [65](#)
205. Duffy, T.S., G. Shen, J. Shu, H.K. Mao, R.J. Hemley and A.K. Singh, Elasticity, shear strength, and equation of state of molybdenum and gold from x-ray diffraction under non-hydrostatic compression to 24 GPa, *J. Appl. Phys.*, *86*, 6729-6736, 1999.
206. Eggert, J.H., E. Karmon, R.J. Hemley, H.K. Mao and A.F. Goncharov, Pressure-enhanced ortho-para conversion in solid hydrogen up to 58 GPa, *Proc. Natl. Acad. Sci.*, *96*, 12269-12272, 1999.
207. Fei, Y., D.J. Frost, H.K. Mao, C.T. Prewitt and D. Häusermann, In situ structure determination of the high-pressure phase of Fe₃O₄, *Am. Mineral.*, *84*, 203-206, 1999.
208. Feldman, J.L., J.H. Eggert, J. DeKinder, H.K. Mao and R.J. Hemley, Influence of order-disorder in vibron excitations of H₂ and D₂ in ortho-para mixed crystals, *J. Low Temp. Phys.*, *115*, 181-216, 1999.
209. Goncharov, A.F., V.V. Struzhkin, H.K. Mao and R.J. Hemley, Raman spectroscopy of dense H₂O and the transition to symmetric hydrogen bonds, *Phys. Rev. Lett.*, *83*, 1998-2001, 1999. [46](#)
210. Hirose, K., Y. Fei, Y. Ma and H.K. Mao, The fate of subducted basaltic crust in the Earth's lower mantle, *Nature*, *397*, 53-56, 1999. [96](#)
211. Merkel, S., R.J. Hemley and H.K. Mao, Finite element modeling of diamond deformation at multimegabar pressures, *Appl. Phys. Lett.*, *74*, 656-658, 1999.
212. Rueff, J.-P., C.C. Kao, V.V. Struzhkin, J. Badro, J. Shu, R.J. Hemley and H.K. Mao, Pressure induced high-spin to low-spin transition in FeS evidenced by x-ray emission spectroscopy, *Phys. Rev. Lett.*, *82*, 3284-3287, 1999. [53](#)
213. Timofeev, Y.A., H.K. Mao, V.V. Struzhkin and R.J. Hemley, Inductive method for investigation of ferromagnetic properties of materials under pressure, *Rev. Sci. Instrum.*, *70*, 4059-4061, 1999.
214. Zhang, R. Y., J. Shu, H.K. Mao and J.G. Liou, Magnetite lamellae in olivine and clinohumite from Dabie UHP ultramafic rocks, central China, *Am. Mineral.*, *84*, 564-569, 1999.
215. Chou, I.-M., J. Blank, A.F. Goncharov, H.K. Mao and R.J. Hemley, In situ observations of a high-pressure phase of H₂O ice, *Science*, *281*, 809-812, 1998. [57](#)
216. Goncharov, A.F., R.J. Hemley, H.K. Mao and J. Shu, New high-pressure excitations in para-hydrogen, *Phys. Rev. Lett.*, *80*, 101-114, 1998. [32](#)
217. Hemley, R.J., A.F. Goncharov, R. Lu, V.V. Struzhkin, M. Li and H.K. Mao, High-pressure synchrotron infrared spectroscopy at the National Synchrotron Light Source, *Nuovo Cimento*, *20*, 539-551, 1998.
218. Hemley, R.J., A.F. Goncharov, H.K. Mao, E. Karmon and J.H. Eggert, Spectroscopic studies of p-H₂ to above 200 GPa, *J. Low Temp. Phys.*, *110*, 75-88, 1998.
219. Hemley, R.J. and H.K. Mao, New phenomena in low-Z materials at megabar pressures, *J. Phys. Condensed Matter*, *10*, 11157-11167, 1998.
220. Hemley, R.J., M.S. Somayazulu, A.F. Goncharov and H.K. Mao, High-pressure Raman spectroscopy of Ar-H₂ and CH₄-H₂ van der Waals compounds, *Asian J. Phys.*, *7*, 319-322, 1998.
221. **Mao, H.K., J. Shu, G. Shen, R.J. Hemley, B. Li and A.K. Singh, Elasticity and rheology of iron above 220 GPa and the nature of the Earth's inner core, *Nature*, *396*, 741-743, 1998. [104](#)

222. Shen, G., T.S. Duffy, H.K. Mao, R.J. Hemley and M.L. Rivers, Melting and crystal structures of iron at high pressures and temperatures, *Geophys. Res. Lett.*, 25, 373-376, 1998. [116](#)
223. Shieh, S.R., H.K. Mao, R.J. Hemley and L.-C. Ming, Decomposition of phase D in the lower mantle and the fate of dense hydrous silicates in subducting slabs, *Earth Planet. Sci. Lett.*, 159, 13-23, 1998.
224. Shu, J., H.K. Mao, J. Hu, Y. Fei and R.J. Hemley, Single-crystal x-ray diffraction of wüstite to 30 GPa hydrostatic pressure, *N. Jb. Miner. Abh., Special Issue: Memorial Volume for Matthias Rosenhauer*, 172, 309-323, 1998.
225. Singh, A.K., C. Balasingh, H.K. Mao, R.J. Hemley and J. Shu, Analysis of lattice strains measured under non-hydrostatic pressure, *J. Appl. Phys.*, 83, 7567-7575, 1998. [76](#)
226. Singh, A.K., H.K. Mao, J. Shu and R.J. Hemley, Estimation of single-crystal elastic moduli from polycrystalline x-ray diffraction at high pressure: Applications to FeO and iron, *Phys. Rev. Lett.*, 80, 2157-2160, 1998. [98](#)
227. Zha, C.S., T.S. Duffy, R.T. Downs, H.K. Mao and R.J. Hemley, Brillouin scattering and x-ray diffraction of San Carlos olivine: Direct pressure determination to 32 GPa, *Earth Planet. Sci. Lett.*, 159, 25-34, 1998.
228. Hemley, R.J., H.K. Mao, G. Shen, J. Badro, P. Gillet, M. Hanfland and D. Häusermann, X-ray imaging of stress and strain of diamond, iron, and tungsten at megabar pressures, *Science*, 276, 1242-1245, 1997. [87](#)
229. Hemley, R.J., I.I. Mazin, A.F. Goncharov and H.K. Mao, Vibron effective charge in dense hydrogen, *Europhys. Lett.*, 37, 403-407, 1997.
230. Hemley, R.J., C. Meade and H.K. Mao, Comment on "Medium-range order in permanently densified SiO₂ and GeO₂ glass", *Phys. Rev. Lett.*, 79, 1420, 1997. [17](#)
231. **Mao, H.K., G. Shen and R.J. Hemley, Multivariant dependence of Fe-Mg partitioning in the lower mantle, *Science*, 278, 2098-2100, 1997. [66](#)
232. Mazin, I.I., R.J. Hemley, A.F. Goncharov, M. Hanfland and H.K. Mao, Quantum and classical orientational ordering in solid hydrogen, *Phys. Rev. Lett.*, 78, 1066-1069, 1997. [43](#)
233. Somayazulu, M.S., R.J. Hemley, A.F. Goncharov, H.K. Mao and L.W. Finger, High-pressure compounds in the methane-hydrogen system: X-ray, infrared and Raman studies on CH₄(H₂)₂, *Eur. J. Solid State Inorg. Chem.*, 34, 705-713, 1997.
234. Struzhkin, V.V., A.F. Goncharov, R.J. Hemley and H.K. Mao, Cascading Fermi resonances and the soft mode in dense ice, *Phys. Rev. Lett.*, 78, 4446-4449, 1997. [40](#)
235. **Struzhkin, V.V., R.J. Hemley, H.K. Mao and Y.A. Timofeev, Superconductivity at 10 to 17 K in compressed sulfur, *Nature*, 390, 382-384, 1997. [74](#)
236. Struzhkin, V.V., Y.A. Timofeev, R.J. Hemley and H.K. Mao, Superconducting T_c and electron-phonon coupling in Nb to 132 GPa: magnetic susceptibility at megabar pressures, *Phys. Rev. Lett.*, 79, 4262-4265, 1997. [32](#)
237. Yoo, C.S., J. Akella, A.J. Campbell, H.K. Mao and R.J. Hemley, Detecting phases of iron, *Science*, 275, 94-96, 1997. [5](#)
238. Zha, C.S., T.S. Duffy, H.K. Mao, R.T. Downs, R.J. Hemley and D.J. Weidner, Single-crystal elasticity of β-Mg₂SiO₄ to the pressure of the 410-km seismic discontinuity in the Earth's mantle, *Phys. Earth Planet. Inter.*, 147, E9-E15, 1997.
239. Bundy, F.P., W.A. Bassett, M.S. Weathers, R.J. Hemley, H.K. Mao and A.F. Goncharov, Review Article The pressure-temperature phase and transformation diagram for carbon; updated through 1994, *Carbon*, 34, 141-153, 1996. [113](#)
240. Goncharov, A.F., J.H. Eggert, I.I. Mazin, R.J. Hemley and H.K. Mao, Raman excitations and orientational ordering in deuterium at high pressure, *Phys. Rev. B, Rapid Comm.*, 54, R15590-R15593, 1996.
241. Goncharov, A.F., V.V. Struzhkin, M. Somayazulu, R.J. Hemley and H.K. Mao, Compression of ice to 210 GPa: Evidence for a symmetric hydrogen bonded phase, *Science*, 273, 218-220, 1996. [85](#)

242. Hemley, R.J. and H.K. Mao, Dense molecular hydrogen: order, disorder, and localization, *J. Non-Cryst. Solids*, 205-207, 282-289, 1996.
243. Hemley, R.J., H.K. Mao, A.F. Goncharov, M. Hanfland and V.V. Struzhkin, Synchrotron infrared spectroscopy to 0.15 eV of H₂ and D₂ at megabar pressures, *Phys. Rev. Lett.*, 76, 1667-1670, 1996. [53](#)
244. Kingma, K.J., H.K. Mao and R.J. Hemley, Synchrotron x-ray diffraction of SiO₂ to multimegabar pressures, *High Pressure Res.*, 14, 363-374, 1996.
245. Loubeyre, P., R. LeToullec, D. Hausermann, M. Hanfland, R.J. Hemley, H.K. Mao and L. W. Finger, X-ray diffraction and equation of state of hydrogen at megabar pressures, *Nature*, 383, 702-704, 1996. [156](#)
246. Mao, H.K. and R.J. Hemley, Energy dispersive x-ray diffraction of micro-crystals at ultrahigh pressures, *High Pressure Res.*, 14, 257-267, 1996.
247. Mao, H.K. and R.J. Hemley, Experimental studies of the Earth's deep interior: Accuracy and versatility of diamond cells, *Phil. Trans. R. Soc. Lond. A*, 354, 1315-1333, 1996.
248. Mao, H.K., J. Shu, Y. Fei, J. Hu and R.J. Hemley, The wüstite enigma, *Phys. Earth Planet. Inter.*, 96, 135-145, 1996.
249. Somayazulu, M.S., L.W. Finger, R.J. Hemley and H.K. Mao, New high-pressure compounds in methane-hydrogen mixtures, *Science*, 271, 1400-1402, 1996. [30](#)
250. Vos, W.L., L.W. Finger, R.J. Hemley and H.K. Mao, Pressure dependence of hydrogen bonding in a novel H₂O-H₂ clathrate, *Chem. Phys. Lett.*, 257, 524-530, 1996.
251. Zha, C.S., T.S. Duffy, R.T. Downs, H.K. Mao and R.J. Hemley, Sound velocity and elasticity of single-crystal forsterite to 16 GPa, *J. Geophys. Res.*, 101, 17535-17545, 1996. [62](#)
252. Duffy, T.S., R.J. Hemley and H.K. Mao, Equation of state and shear strength at multimegabar pressures: Magnesium oxide to 227 GPa, *Phys. Rev. Lett.*, 74, 1371-1374, 1995. [143](#)
253. Duffy, T.S., C. Meade, Y. Fei, H.K. Mao and R.J. Hemley, High-pressure phase transition in brucite Mg(OH)₂, *Am. Mineral.*, 80, 222-230, 1995.
254. Duffy, T.S., J. Shu, H.K. Mao and R.J. Hemley, Single-crystal x-ray diffraction of brucite to 14 GPa, *Phys. Chem. Minerals*, 22, 277-281, 1995.
255. Duffy, T.S., C.S. Zha, R.T. Downs, H.K. Mao and R.J. Hemley, Elastic constants of forsterite Mg₂SiO₄ to 16 GPa, *Nature*, 378, 170-173, 1995. [67](#)
256. Fei, Y., C.T. Prewitt, H.K. Mao and C.M. Bertka, Structure and density of FeS at high pressure and high temperature and the internal structure of Mars, *Science*, 268, 1892-1894, 1995. [75](#)
257. Feldman, J.L., J.H. Eggert, J. DeKinder, R.J. Hemley, H.K. Mao and D. Schoemaker, Vibron excitations in solid hydrogen: A generalized binary random alloy problem, *Phys. Rev. Lett.*, 74, 1379-1382, 1995. [9](#)
258. Goncharov, A.F., I.I. Mazin, J.H. Eggert, R.J. Hemley and H.K. Mao, Invariant points and phase transitions in deuterium at megabar pressures, *Phys. Rev. Lett.*, 75, 2514-2517, 1995. [25](#)
259. Hanfland, M., R.J. Hemley and H.K. Mao, Reply to "Comment on 'Optical absorption measurements of hydrogen at megabar pressures'", *Phys. Rev. B*, 52, 1408-1410, 1995.
260. Kingma, K.J., R.E. Cohen, R.J. Hemley and H.K. Mao, Transformation of stishovite to a denser phase at lower-mantle pressures, *Nature*, 374, 243-245, 1995. [130](#)
261. Mao, H.K., J. Eggert and R.J. Hemley, Reflectance effects caused by refractive-index gradient in diamond-cell samples of H₂ and Al₂O₃, *Mod. Phys. Lett. B*, 9, 201-208, 1995.
262. Meade, C., H.K. Mao and J. Hu, High-temperature phase transition and dissociation of (Mg,Fe)SiO₃ perovskite at lower mantle pressures, *Science*, 268, 1743-1745, 1995. [53](#)
263. Saxena, S.K., L.S. Dubrovinsky, P. Haggkvist, Y. Cerenius, G. Shen and H.K. Mao, Synchrotron x-ray study of iron at high pressure and temperature, *Science*, 269, 1703-1704, 1995. [78](#)

264. Soos, Z.G., J.H. Eggert, R.J. Hemley, M. Hanfland and H.K. Mao, Charge transfer and electron-vibron coupling in dense solid hydrogen, *Chem. Phys.*, 200, 23-39, 1995.
265. Yoo, C.S., J. Akella, A.J. Campbell, H.K. Mao and R.J. Hemley, Phase diagram of iron by in situ x-ray diffraction: implications for the Earth's core, *Science*, 270, 1473-1475, 1995. [90](#)
266. Duffy, T.S., W.L. Vos, C.-S. Zha, R.J. Hemley and H.K. Mao, Sound velocities in dense hydrogen and the interior of Jupiter, *Science*, 263, 1590-1593, 1994. [33](#)
267. Eggert, J.H., J.Z. Hu, H.K. Mao, L. Beauvais, R.L. Meng and C.W. Chu, Compressibility of the $\text{HgBa}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+2+\delta}$ ($n=1,2,3$) high-temperature superconductors, *Phys. Rev. B*, 49, 15299-15304, 1994.
268. Eggert, J.H., H.K. Mao and R.J. Hemley, Bivibron linewidths in solid deuterium at high pressure, *J. Luminescence*, 58, 328-331, 1994.
269. Fei, Y. and H.K. Mao, *In situ* determination of the NiAs phase of FeO at high pressure and high temperature, *Science*, 266, 1678-1680, 1994. [71](#)
270. Fei, Y., D. Virgo, B.O. Mysen, Y. Wang and H.K. Mao, Temperature dependent electron delocalization in (Mg,Fe)SiO₃-perovskite, *Am. Mineral.*, 79, 826-837, 1994.
271. Gao, L., Y.Y. Xue, F. Chen, Q. Xiong, R.L. Meng, D. Ramirez, C.W. Chu, J. H. Eggert and H. K. Mao, Universal enhancement of T_c under high pressure in $\text{HgBa}_2\text{Ca}_{m-1}\text{Cu}_m\text{O}_{2m+2+\delta}$, *Physica C*, 1493-1494, 1994.
272. Gao, L., Y.Y. Xue, F. Chen, Q. Xiong, R.L. Meng, D. Ramirez, C.W. Chu, J.H. Eggert and H.K. Mao, Superconductivity up to 164 K in $\text{HgBa}_2\text{Ca}_{m-1}\text{Cu}_m\text{O}_{2m+2+\delta}$ ($m=1,2$, and 3) under quasihydrostatic pressures, *Phys. Rev. B, Rapid Comm.*, 50, 4260-4263, 1994. [224](#)
273. Hemley, R.J., Z.G. Soos, M. Hanfland and H.K. Mao, Charge-transfer states in dense hydrogen, *Nature*, 369, 384-387, 1994. [42](#)
274. Kingma, K.J., R.J. Hemley, H.K. Mao and D.R. Veblen, Reply to McNeil and Grimsditch's Comment on "New high-pressure transformation in α -quartz", *Phys. Rev. Lett.*, 72, 1302, 1994. [13](#)
275. Li, X. and H.K. Mao, Solid carbon at high pressure: electrical resistivity and phase transition, *Phys. Chem. Minerals*, 21, 1-5, 1994.
276. Mao, H.K., Pressure alchemy, *Rev. High Pressure Sci. Tech. --Japanese High-Pressure Soc.*, 3, 8-11, 1994.
277. **Mao, H.K. and R.J. Hemley, Ultrahigh-pressure transitions in solid hydrogen, *Rev. Mod. Phys.*, 66, 671-692, 1994. [235](#)
278. Mao, H.K., J. Shu, J. Hu and R.J. Hemley, High-pressure x-ray diffraction study of diaspore, *Solid State Comm.*, 90, 497-500, 1994.
279. Reichlin, R., A.K. McMahan, M. Ross, S. Martin, J. Hu, R.J. Hemley, H.K. Mao and Y. Wu, Optical, x-ray and band-structure studies of iodine at pressures of several megabars, *Phys. Rev. B*, 49, 3725-3733, 1994.
280. Zha, C.S., R.J. Hemley, H.K. Mao, T.S. Duffy and C. Meade, Acoustic velocities and refractive index of SiO₂ glass to 57.5 GPa by Brillouin scattering, *Phys. Rev. B*, 50, 13105-13112, 1994. [61](#)
281. Eggert, J.H., H.K. Mao and R.J. Hemley, Observation of a two-vibron bound-to-unbound transition in solid deuterium at high pressure, *Phys. Rev. Lett.*, 70, 2301-2304, 1993. [22](#)
282. Fei, Y. and H.K. Mao, Static compression of $\text{Mg}(\text{OH})_2$ to 78 GPa at high temperature and constraints on the equation of state of fluid H₂O, *J. Geophys. Res.*, 98, 11875-11884, 1993.
283. Fei, Y., H.K. Mao and R.J. Hemley, Thermal expansivity, bulk modulus, and melting curve of H₂O-ice VII to 20 GPa, *J. Chem. Phys.*, 99, 5369-5373, 1993.
284. Hanfland, M., R.J. Hemley and H.K. Mao, Novel infrared vibron absorption in solid hydrogen at megabar pressures, *Phys. Rev. Lett.*, 70, 3760-3763, 1993. [62](#)
285. Hemley, R.J., J.H. Eggert and H.K. Mao, Low-frequency Raman spectroscopy of deuterium to megabar pressures at 77-295 K, *Phys. Rev. B*, 48, 5779-5788, 1993.

286. Kingma, K.J., R.J. Hemley, H.K. Mao and D.R. Veblen, New high-pressure transformation in α -quartz, *Phys. Rev. Lett.*, *70*, 3927-3930, 1993. [97](#)
287. Kingma, K.J., C. Meade, R.J. Hemley, H.K. Mao and D.R. Veblen, Microstructural observations of α -quartz amorphization, *Science*, *259*, 666-669, 1993. [120](#)
288. Loubeyre, P., R. Letoullec, J.P. Pinceaux, H.K. Mao, J. Hu and R.J. Hemley, Equation of state and phase diagram of solid ^4He from single-crystal x-ray diffraction over a large P-T domain, *Phys. Rev. Lett.*, *71*, 2272-2275, 1993. [41](#)
289. Vos, W.L., L.W. Finger, R.J. Hemley and H.K. Mao, Novel $\text{H}_2\text{-H}_2\text{O}$ clathrate at high pressures, *Phys. Rev. Lett.*, *71*, 3150-3153, 1993. [75](#)
290. Zha, C.S., T.S. Duffy, H.K. Mao and R.J. Hemley, Elasticity of hydrogen to 24 GPa from single-crystal Brillouin scattering and synchrotron x-ray diffraction, *Phys. Rev. B*, *48*, 9246-9255, 1993.
291. Eggert, J. H., C. S. Zha, R. J. Hemley and H. K. Mao, Raman scattering of vibrational overtones in deuterium at high pressures, *J. Low Temp. Physics*, *89*, 707-710, 1992.
292. Fei, Y., H. K. Mao, J. Shu and J. Hu, P-V-T equation of state of magnesiowüstite ($\text{Mg}_{0.6}\text{Fe}_{0.4}\text{O}$), *Phys. Chem. Minerals*, *18*, 416-422, 1992. [70](#)
293. Fei, Y., H. K. Mao, J. F. Shu, G. Parthasarathy and W. A. Bassett, Simultaneous high P-T x-ray diffraction study of $\beta\text{-(Mg,Fe)}_2\text{SiO}_4$ to 26 GPa and 900 K, *J. Geophys. Res.*, *97*, 4489-4495, 1992. [69](#)
294. Hanfland, M., R. J. Hemley, H. K. Mao and G. P. Williams, Synchrotron infrared spectroscopy at megabar pressures: vibrational dynamics of hydrogen to 180 GPa, *Phys. Rev. Lett.*, *69*, 1129-1132, 1992. [50](#)
295. Hemley, R. J. and H. K. Mao, Anomalous low-frequency excitations in diamond-cell studies of hydrogen at megabar pressures, *Physics Letters A*, *163*, 429-434, 1992.
296. LeToullec, R., P. Loubeyre, J. P. Pinceaux, H. K. Mao and J. Hu, A system for doing low temperature-high pressure single crystal x-ray diffraction with a synchrotron source, *High Pressure Res.*, *6*, 379-388, 1992.
297. LeToullec, R., P. Loubeyre, J. P. Pinceaux, H. K. Mao and J. Hu, Single crystal x-ray diffraction with a synchrotron source in a MDAC at low temperature, *High Pressure Res.*, *8*, 691-696, 1992.
298. Mao, H. K. and R. J. Hemley, Hydrogen at high pressure, *Am. Sci.*, *80*, 234-247, 1992.
299. Mao, H. K., R. J. Hemley and M. Hanfland, Stability of ruby in solid hydrogen at megabar pressures, *Phys. Rev. B*, *45*, 8108-8111, 1992.
300. Meade, C., R. J. Hemley and H. K. Mao, High pressure x-ray diffraction of SiO_2 glass, *Phys. Rev. Lett.*, *69*, 1387-1390, 1992. [186](#)
301. Stixrude, L., R. J. Hemley, Y. Fei and H. K. Mao, Thermoelasticity of silicate perovskite and magnesiowüstite and stratification of the Earth's mantle, *Science*, *257*, 1099-1101, 1992. [111](#)
302. Vos, W. L., L. W. Finger, R. J. Hemley, J. Hu, H. K. Mao and J. A. Schouten, A high-pressure van der Waals compound in solid nitrogen-helium mixtures, *Nature*, *358*, 46-48, 1992. [53](#)
303. Badding, J. V., R. J. Hemley and H. K. Mao, High-pressure chemistry of hydrogen in metals: in-situ study of iron hydride, *Science*, *253*, 421-424, 1991. [59](#)
304. Badding, J. V., H. K. Mao and R. J. Hemley, High-pressure synchrotron x-ray diffraction of Cs IV and Cs V, *Solid State Comm.*, *77*, 801-805, 1991.
305. Fei, Y., H. K. Mao and B. O. Mysen, Experimental determination of element partitioning and calculation of phase relations in the MgO-FeO-SiO_2 system at high pressure and high temperature, *J. Geophys. Res.*, *96*, 2157-2169, 1991. [96](#)
306. Hanfland, M., R. J. Hemley and H. K. Mao, Optical absorption measurements of hydrogen at megabar pressures, *Phys. Rev. B, Rapid Communication*, *43*, 8767-8770, 1991.
307. Hemley, R. J., M. Hanfland and H. K. Mao, High-pressure dielectric measurements of hydrogen to 170 GPa, *Nature*, *350*, 488-491, 1991. [35](#)

308. **Mao, H. K. and R. J. Hemley, New optical transitions in diamond at ultrahigh pressures, *Nature*, 351, 721-724, 1991. [50](#)
309. **Mao, H. K., R. J. Hemley, Y. Fei, J. F. Shu, L. C. Chen, A. P. Jephcoat, Y. Wu and W. A. Bassett, Effect of pressure, temperature, and composition on lattice parameters and density of (Fe,Mg)SiO₃-perovskites to 30 GPa, *J. Geophys. Res.*, 96, B5, 8069-8079, 1991. [203](#)
310. Shu, J., J. Akella, J. Z. Liu, H. K. Mao and L. W. Finger, High pressure DAC studies on undoped La₂CuO₄, *Physica C - Superconductivity*, 176, 503-506, 1991.
311. Skelton, E. F., J. D. Ayers, S. B. Qadri, N. E. Moulton, K. P. Cooper, L. W. Finger, H. K. Mao and Z. Hu, Synchrotron x-ray diffraction from a microscopic single crystal under pressure, *Science*, 253, 1123-1125, 1991. [16](#)
312. Wu, Y., A. C. Thompson, J. H. Underwood, H. K. Mao, Y. W. Fei, J. Z. Hu, J. V. Badding and J. F. Shu, A focusing system for X-ray diffraction studies of materials under high pressure in the diamond cell, *Advances in X-ray Optics*, 34, 437-446, 1991.
313. Hemley, R. J. and H. K. Mao, Critical behavior in the hydrogen insulator-metal transition, *Science*, 249, 391-393, 1990. [46](#)
314. Hemley, R. J. and H. K. Mao, Structural transitions in hydrogen and deuterium at ultrahigh pressures, *High Pressure Res., International AIRAPT Conference, XIIth, Paderborn, West Germany*, 5, 156-158, 1990.
315. Hemley, R. J., H. K. Mao, L. W. Finger, A. P. Jephcoat, R. M. Hazen and C. S. Zha, Equation of state of solid hydrogen and deuterium from single-crystal x-ray diffraction to 26.5 GPa, *Phys. Rev. B*, 42, 6458-6470, 1990. [103](#)
316. Hemley, R. J., H. K. Mao and J. F. Shu, Low-frequency vibrational dynamics of hydrogen at ultrahigh pressures, *Phys. Rev. Lett.*, 65, 2670-2673, 1990. [45](#)
317. Mao, H. K., R. J. Hemley and M. Hanfland, Infrared reflectance measurements of the insulator-metal transition in solid hydrogen, *Phys. Rev. Lett.*, 65, 484-487, 1990. [63](#)
318. Mao, H. K., Y. Wu, L. C. Chen, J. F. Shu and A. P. Jephcoat, Static compression of iron to 300 GPa and Fe_{0.8}Ni_{0.2} alloy to 260 GPa: Implications for composition of the core, *J. Geophys. Res.*, 95, 21,737-21,742, 1990. [168](#)
319. Mao, H. K., Y. Wu, R. J. Hemley, L. C. Chen, J. F. Shu, L. W. Finger and D. E. Cox, High-pressure phase transition and equation of state of CsI, *Phys. Rev. Lett.*, 64, 1749-1752, 1990. [28](#)
320. Mao, H. K., Y. Wu, J. F. Shu, J. Z. Hu, R. J. Hemley and D. E. Cox, High-pressure phase transition and equation of state of lead to 238 GPa, *Solid State Comm.*, 74, 1027-1029, 1990.
321. Mao, H.K., and R.J. Hemley, Response to Technical Comment by I. F. Silvera, *Science*, 247, 863-864, 1990. [2](#)
322. Hazen, R. M., L. W. Finger, R. J. Hemley and H. K. Mao, High-pressure crystal chemistry and amorphization of α -quartz, *Solid State Comm.*, 72, 507-511, 1989. [160](#)
323. Hemley, R. J., L. C. Chen and H. K. Mao, New transformations between crystalline and amorphous ice, *Nature*, 338, 638-640, 1989. [98](#)
324. Hemley, R. J. and H. K. Mao, Isotope effects in dense solid hydrogen: phase transition in deuterium at 190 \pm 20 GPa, *Phys. Rev. Lett.*, 63, 1393-1395, 1989. [42](#)
325. Hemley, R. J., C. S. Zha, A. P. Jephcoat, H. K. Mao, L. W. Finger and D. E. Cox, X-ray diffraction and equation of state of solid neon to 110 GPa, *Phys. Rev. B*, 39, 11820-11827, 1989. [69](#)
326. Hofmeister, A. M., J. Xu, H. K. Mao, P. M. Bell and T. C. Hoering, Thermodynamics of Fe-Mg olivines at mantle pressures: Mid- and far-infrared spectroscopy at high pressure, *Amer. Mineral.*, 74, 281-306, 1989. [63](#)
327. Mao, H. K., L.C. Chen, R.J. Hemley, A.P. Jephcoat, Y. Wu and W.A. Bassett, Stability and equation of state of CaSiO₃ perovskite to 134 GPa, *J. Geophys. Res.*, 94, B12, 17889-17894, 1989. [98](#)
328. Mao, H. K. and R. J. Hemley, Optical observations of hydrogen above 200 gigapascals: evidence for metallization by band overlap, *Science*, 244, 1462-1465, 1989. [109](#)

329. **Mao, H. K., Y. Wu, R. J. Hemley, L. C. Chen, J. F. Shu and L. W. Finger, X-ray diffraction to 302 Gigapascals: high-pressure crystal structure of cesium iodide, *Science*, 246, 649-651, 1989. [44](#)
330. Richet, P., H. K. Mao and P. M. Bell, Bulk moduli of magnesiowüstites from static compression measurements, *J. Geophys. Res.*, 94, 3037-3045, 1989.
331. Richet, P., H. K. Mao and P. M. Bell, Static compression and equation of state of CaO to 1.35 Mbar, *J. Geophys. Res.*, 93, 15279-15288, 1989.
332. **Wang, X., J. G. Liou and H. K. Mao, Coesite-bearing eclogite from the Dabie Mountains in central China, *Geology*, 17, 1085-1088, 1989. [288](#)
333. Frantz, J. D., H. K. Mao, Y. Zhang, Y. Wu, A. C. Thompson, J. H. Underwood, R. D. Giauque, K. W. Jones and M. L. Rivers, Analysis of fluid inclusions by x-ray fluorescence using synchrotron radiation, *Chemical Geology*, 69, 235-244, 1988.
334. **Hemley, R. J., A. P. Jephcoat, H. K. Mao, L. C. Ming and M. Manghnani, Pressure-induced amorphization of crystalline silica, *Nature*, 334, 52-54, 1988. [325](#)
335. Hemley, R. J. and H. K. Mao, Phase transition in solid molecular hydrogen at ultrahigh pressures, *Phys. Rev. Lett.*, 61, 857-860, 1988. [121](#)
336. Jephcoat, A. P., R. J. Hemley and H. K. Mao, X-ray diffraction of $\text{Cr}^{+3}\text{:Al}_2\text{O}_3$ to 175 GPa, *Physica B*, 150, 115-121, 1988.
337. Jephcoat, A. P., R. J. Hemley, H. K. Mao, R. E. Cohen and M. J. Mehl, Raman spectroscopy and theoretical modeling of BeO at high pressure, *Phys. Rev. B*, 37, 4727, 1988.
338. Mao, H. K., R. J. Hemley, Y. Wu, A. P. Jephcoat, L. W. Finger, C. S. Zha and W. A. Bassett, High-pressure phase diagram and equation of state of solid helium from single-crystal x-ray diffraction to 23.3 GPa, *Phys. Rev. Lett.*, 60, 2649-2652, 1988. [45](#)
339. **Mao, H. K., A. P. Jephcoat, R. J. Hemley, L. W. Finger, C. S. Zha, R. M. Hazen and D. E. Cox, Synchrotron x-ray diffraction measurements of single-crystal hydrogen to 26.5 GPa, *Science*, 239, 1131-1134, 1988. [79](#)
340. Richet, P., J. A. Xu and H. K. Mao, Quasi-hydrostatic compression of ruby to 500 kbar, *Phys. Chem. Minerals*, 16, 207-211, 1988. [62](#)
341. Hazen, R. M., L. W. Finger, R. J. Angel, C. T. Prewitt, N. L. Ross, H. K. Mao, C. G. Hadidiacos, P. H. Hor, R. L. Meng and C. W. Chu, Crystallographic description of phases in the Y-Ba-Cu-O superconductor, *Phys. Rev. B*, 35, 7238-7241, 1987. [285](#)
342. Hazen, R. M., H. K. Mao, L. W. Finger and R. J. Hemley, Single-crystal x-ray diffraction of n-H₂ at high pressure, *Phys. Rev. B*, 36, 3944-3947, 1987.
343. Hemley, R. J., P. M. Bell and H. K. Mao, Laser techniques in high-pressure geophysics, *Science*, 237, 605-612, 1987. [50](#)
344. Hemley, R. J., A. P. Jephcoat, H. K. Mao, L. W. Finger, C. S. Zha and D. E. Cox, Compression of H₂O-ice to 128 GPa (1.28 Mbar), *Nature*, 330, 737-740, 1987. [121](#)
345. Hemley, R. J. and H. K. Mao, Single-crystal micro-Raman spectroscopy of phases in the Y-Ba-Cu-O superconductor, *Phys. Rev. Lett.*, 58, 2340-2342, 1987. [116](#)
346. Jephcoat, A. P., H. K. Mao, L. W. Finger, D. E. Cox, R. J. Hemley and C. S. Zha, Pressure-induced structural phase transitions in solid xenon, *Phys. Rev. Lett.*, 59, 2670-2673, 1987. [76](#)
347. Mao, H. K., R. J. Hemley and E. C. T. Chao, The application of micro-Raman spectroscopy to analysis and identification of minerals in thin section, *Scanning Microscopy*, 1, 495-501, 1987.
348. Xu, J., H. K. Mao and P. M. Bell, The pressure calibration up to Mbars and the achievement of 5.5 Mbars under hydrostatic and nonhydrostatic condition, *Acta physica Sinica*, 36, 501-510, 1987.
349. Bell, P. M., H. K. Mao and R. J. Hemley, Observations of solid H₂, D₂, N₂ at pressures around 1.5 megabar at 25°C, *Physica B*, 139-140, 16-20, 1986.

350. Hemley, R. J., H. K. Mao, P. M. Bell and B. O. Mysen, Raman spectroscopy of SiO₂ glass at high pressure, *Phys. Rev. Lett.*, *57*, 747-750, 1986. [242](#)
351. Hemley, R. J., H. K. Mao and E. C. T. Chao, Raman spectrum of natural and synthetic stishovite, *Phys. Chem. Minerals*, *13*, 285-290, 1986.
352. Hemley, R. M., H. K. Mao, P. M. Bell and S. Akimoto, Lattice vibrations of high-pressure SiO₂ phases: Raman spectrum of synthetic stishovite, *Physica B*, *139-140*, 455-457, 1986.
353. Jephcoat, A. P., H. K. Mao and P. M. Bell, The static compression of iron to 78 GPa with rare gas solids as pressure-transmitting media, *J. Geophys. Res.*, *91*, B5, 4677-4684, 1986. [130](#)
354. **Mao, H. K., J. Xu and P. M. Bell, Calibration of the ruby pressure gauge to 800 kbar under quasihydrostatic conditions, *J. Geophys. Res.*, *91*, B5, 4673-4676, 1986. [810](#)
355. Ross, M., H. K. Mao, P. M. Bell and J. Xu, The equation of state of dense argon: a comparison of shock and static studies, *J. Chem. Phys.*, *85*, 1028-1033, 1986. [80](#)
356. Xu, J., H. K. Mao and P. M. Bell, High pressure ruby and diamond fluorescence: Observations at 0.21 to 0.55 terapascal, *Science*, *232*, 1404-1406, 1986. [94](#)
357. Goettel, K. A., H. K. Mao and P. M. Bell, Generation of static pressures above 2.5 megabars in a diamond-anvil pressure cell, *Rev. Sci. Instrum.*, *56*, 1420-1427, 1985.
358. Mao, H. K., P. M. Bell and R. J. Hemley, Ultrahigh pressures: optical observations and Raman measurements of hydrogen and deuterium to 1.47 Mbar, *Phys. Rev. Lett.*, *55*, 99-102, 1985. [63](#)
359. Sharma, S. K., H. K. Mao, P. M. Bell and J. A. Xu, Measurement of stress in diamond anvils with micro-Raman spectroscopy, *J. Raman Spectros.*, *16*, 350-352, 1985.
360. Bell, P. M., H. K. Mao and K. Goettel, Ultrahigh pressure: beyond 2 megabars and the ruby fluorescence scale, *Science*, *226*, 542-544, 1984. [41](#)
361. Shimizu, H., J. Xu, H. K. Mao and P. M. Bell, High-pressure FT IR measurements of crystalline methylene chloride up to 120 kbar in the diamond anvil cell, *Chem. Phys. Lett.*, *105*, 273-276, 1984.
362. Xu, J., H. K. Mao and P. M. Bell, Position-sensitive X-ray diffraction: hydrostatic compressibility of argon, tantalum, and copper to 769 kbar, *High Temp.-High Pressures*, *16*, 495-499, 1984.
363. Shimizu, H., M. Kumazawa, E. M. Brody, H. K. Mao and P. M. Bell, Acoustic velocity measurements for various directions on solid *n*-deuterium at 136 kbar and 300 K by Brillouin scattering in a diamond anvil cell, *Jpn. J. Appl. Phys.*, *22*, 52, 1983.
364. Boctor, N. Z., P. M. Bell, H. K. Mao and G. Killerud, Petrology and shock metamorphism of Pamp del Infierno chondrite, *Geochim. Cosmochim. Acta*, *46*, 1903-1911, 1982.
365. Brody, E. M., H. Shimizu, H. K. Mao, P. M. Bell and W. A. Bassett, Acoustic velocity and refractive index of fluid hydrogen and deuterium at high pressures, *J. Appl. Phys.*, *52*, 3583-3585, 1981.
366. Finger, L. W., R. M. Hazen, G. Zou, H. K. Mao and P. M. Bell, Structure and compression of crystalline argon and neon at high pressure and room temperature, *Appl. Phys. Lett.*, *39*, 892-894, 1981. [61](#)
367. Mammone, J. F., H. K. Mao and P. M. Bell, Equations of state of CaO under static pressure conditions, *Geophys. Res. Lett.*, *8*, 140-142, 1981.
368. Mao, H. K. and P. M. Bell, Electrical resistivity measurements of conductors in the diamond-window, high-pressure cell, *Rev. Sci. Instrum.*, *52*, 615-616, 1981.
369. Mao, H. K., R. M. Hazen, P. M. Bell and J. Wittig, Evidence for 4f - shell delocalization in praseodymium under pressure, *J. Appl. Phys.*, *52*, 4572-4574, 1981.
370. Shimizu, H., E. M. Brody, H. K. Mao and P. M. Bell, Brillouin measurements of solid *n*-H₂ and *n*-D₂ to 200 kbar at room temperature, *Phys. Rev. Lett.*, *47*, 128-131, 1981. [108](#)
371. Hazen, R. M., H. K. Mao, L. W. Finger and P. M. Bell, Structure and compression of crystalline methane at high pressure and room temperature, *Appl. Phys. Lett.*, *37*, 288-289, 1980.

372. Madon, M., P. M. Bell, H. K. Mao and J. P. Poirer, Transmission electron diffraction and microscopy of synthetic high pressure and microscopy of synthetic high pressure MgSiO₃ phase with perovskite structure, *Geophys. Res. Lett.*, *7*, 629-632, 1980.
373. Sharma, S. K., H. K. Mao and P. M. Bell, Raman measurements of hydrogen in the pressure range 0.2-630 kbar at room temperature, *Phys. Rev. Lett.*, *44*, 886-888, 1980. [87](#)
374. Chu, C. W. and H. K. Mao, Optical absorption of CuCl under pressure, *Phys. Rev. B*, *20*, 4474-4477, 1979.
375. Frantz, J. D. and H. K. Mao, Bimetasomatism resulting from intergranular diffusion: II. Prediction of multiminerale zone sequences, *Am. J. Sci.*, *279*, 302-323, 1979.
376. Jeanloz, R., T. J. Ahrens, H. K. Mao and P. M. Bell, B1-B2 transition in calcium oxide from shock-wave and diamond-cell experiments, *Science*, *206*, 829-830, 1979. [73](#)
377. Mao, H. K. and P. M. Bell, Equations of state of MgO and ϵ -Fe under static pressure conditions, *J. Geophys. Res.*, *84*, 4533-4536, 1979. [119](#)
378. **Mao, H. K. and P. M. Bell, Observations of hydrogen at room temperature (25°C) and high pressure (to 500 kilobars), *Science*, *203*, 1004-1006, 1979. [51](#)
379. Mao, H. K., P. M. Bell, K. J. Dunn, R. M. Chrenko and R. C. DeVries, Absolute pressure measurements and analysis of diamonds subjected to maximum static pressures of 1.3-1.7 Mbar, *Rev. Sci. Instrum.*, *50*, 1002-1009, 1979. [136](#)
380. **Mao, H. K., P. M. Bell, J. Shaner and D. Steinberg, Specific volume measurements of Cu, Mo, Pd, and Ag and calibration of the ruby R₁ fluorescence pressure gauge from 0.06 to 1 Mbar, *J. Appl. Phys.*, *49*, 3276-3283, 1978. [1117](#)
381. **Mao, H. K. and P. M. Bell, High-pressure physics: sustained static generation to 1.36 to 1.72 megabars, *Science*, *200*, 1145-1147, 1978. [140](#)
382. Yagi, T., H. K. Mao and P. M. Bell, Structure and crystal chemistry of perovskite-type MgSiO₃, *Phys. Chem. Minerals*, *3*, 97-110, 1978. [122](#)
383. Mao, H. K., P. M. Bell and D. Virgo, Crystal-field spectra of fassaite from the Angra dos Reis meteorite, *Earth Planet. Sci. Lett.*, *35*, 352-356, 1977.
384. Sung, C.-M., C. Goetze and H. K. Mao, Pressure distribution in the diamond anvil press and the shear strength of fayalite, *Rev. Sci. Instrum.*, *48*, 1386-1391, 1977.
385. Frantz, J. D. and H. K. Mao, Bimetasomatism resulting from intergranular diffusion: I. A theoretical model for monomineralic reaction zone sequences, *Am. J. Sci.*, *279*, 817-840, 1976.
386. Mao, H. K. and P. M. Bell, High-pressure physics: the 1-megabar mark on the ruby R₁ static pressure scale, *Science*, *191*, 851-852, 1976. [55](#)
387. Mao, H. K., T. Takahashi, W. A. Bassett, G. L. Kinsland and L. Merrill, Isothermal compression of magnetite to 320 kbar and pressure-induced phase transformation, *J. Geophys. Res.*, *79*, 1165-1170, 1974.
388. Taylor, L. A., H. K. Mao and P. M. Bell, Identification of the hydrated iron oxide mineral akaganeite in Apollo 16 lunar rocks, *Geology*, *2*, 429-432, 1974.
389. Adams, J. B., P. M. Bell, J. E. Conel, H. K. Mao, T. B. McCord and D. B. Nash, Visible and near-infrared transmission and reflectance measurements of the Luna 20 soil, *Geochim. Cosmochim. Acta*, *37*, 731-743, 1973.
390. Johannes, W., P. M. Bell, H. K. Mao, A. L. Boettcher, D. W. Chipman, J. F. Hayes, R. C. Newton and F. Seifert, An interlaboratory comparison of piston-cylinder pressure calibration using the albite-breakdown reaction, *Contrib. Mineral. Petrol.*, *32*, 24-38, 1971.
391. Mao, H. K., T. Takahashi and W. A. Bassett, Isothermal compression of the spinel phase of Ni₂SiO₄ up to 300 kilobars at room temperature, *Phys. Earth Planet. Inter.*, *3*, 51-54, 1970.
392. Taylor, L. A. and H. K. Mao, A high-pressure polymorph of troilite, *Science*, *170*, 850-851, 1970. [30](#)

393. Mao, H. K., T. Takahashi, W. A. Bassett and J. S. Weaver, Effect of pressure and temperature on the molar volumes of wüstite and of three (Fe,Mg)₂SiO₄ spinel solid solutions, *J. Geophys. Res.*, **74**, 1061-1069, 1969.
394. Takahashi, T., H. K. Mao and W. A. Bassett, Lead: X-ray diffraction study of a high-pressure polymorph, *Science*, **165**, 1352-1353, 1969. [33](#)
395. Bassett, W. A., T. Takahashi, H. K. Mao and J. S. Weaver, Pressure-induced phase transformation in NaCl, *J. Appl. Phys.*, **39**, 319-325, 1968.
396. Takahashi, T., W. A. Bassett and H. K. Mao, Isothermal compression of the alloys of iron up to 300 kilobars at room temperature; iron-nickel alloys, *J. Geophys. Res.*, **73**, 4717-4725, 1968.
397. Mao, H. K., W. A. Bassett and T. Takahashi, Effect of pressure on crystal structure and lattice parameters of iron up to 300 kilobars, *J. Appl. Phys.*, **38**, 272-276, 1967.

Books & Conference Proceeding Chapters

- b1. Lin, J.F., W. Sturhahn, J. Zhao, G. Shen, H.K. Mao, and R.J. Hemley, Nuclear resonant inelastic X-ray scattering and synchrotron Mössbauer spectroscopy with laser-heated diamond anvil cells, in *Advances in High-Pressure Technology for Geophysical Applications*, edited by J. Chen et al., pp. 397-411, Elsevier, Amsterdam, 2005.
- b2. Okuchi, T., H.K. Mao, and R.J. Hemley, A new gasket material for higher resolution NMR in diamond anvil cells, in *Advances in High-Pressure Technology for Geophysical Applications*, edited by J. Chen et al., pp. 503-509, Elsevier, Amsterdam, 2005.
- b3. Santoro, M., J.F. Lin, V.V. Struzhkin, H.K. Mao, and R.J. Hemley, In situ Raman spectroscopy with laser-heated diamond anvil cells, in *Advances in High-Pressure Technology for Geophysical Applications*, edited by J. Chen, pp. 413-423, Elsevier, Amsterdam, 2005.
- b4. Song, Y., R.J. Hemley, H.K. Mao, and D.R. Herschbach, Nitrogen-containing molecular systems at high pressures and temperature, in *Chemistry at Extreme Conditions*, edited by M.R. Manaa, pp. 189-222, Elsevier, Amsterdam, 2005.
- b5. Hemley, R. J., and H. K. Mao, New findings in static high-pressure science, in *Shock-Compression of Condensed Matter - 2003*, M. D. Furnish et al., eds., pp. 17-26, Amer. Inst. Phys., Melville, N.Y. 2004.
- b6. Goncharov, A.F., V.V. Struzhkin, E. Gregoryanz, H.K. Mao, R.J. Hemley, G. Lapertot, S.L. Bud'ko, P.C. Canfield, and I.I. Mazin, Pressure dependence of the Raman spectrum, lattice parameters and superconducting critical temperature of MgB₂, in *Superconducting Magnesium Diboride*, edited by A. Narlikar, pp. 339-350, Nova Science Publishers, Huntington, N.Y., 2002.
- b7. Goncharov, A.F., E. Gregoryanz, H.K. Mao, and R.J. Hemley, Raman scattering of metals to very high pressures, in *High Pressure Phenomena (Enrico Fermi Course CXLVII)*, edited by R.J. Hemley, M. Bernasconi, L. Ulivi, and G. Chiarott, pp. 297, IOS Press, 2002.
- b8. Hemley, R.J., and H.K. Mao, Overview of static high pressure science, in *High Pressure Phenomena (Enrico Fermi Course CXLVII)*, edited by R.J. Hemley, M. Bernasconi, L. Ulivi, and G. Chiarott, pp. 3-40, IOS Press, 2002.
- b9. Hemley, R.J., M.I. Eremets, and H.K. Mao, Progress in experimental studies of insulator-metal transitions at multimegabar pressures, in *Frontiers of High-Pressure Research II: Application of High Pressure to Low Dimensional Novel Electronic Materials*, edited by H.D. Hochheimer, pp. 201-216, Kluwer, Amsterdam, 2002.
- b10. Struzhkin, V.V., Y. Timofeev, E. Gregoryanz, H.K. Mao, and R.J. Hemley, New methods for investigating superconductivity at very high pressures, in *High Pressure Phenomena (Enrico Fermi Course CXLVII)*, edited by R.J. Hemley, M. Bernasconi, L. Ulivi, and G. Chiarott, pp. 275, IOS Press, 2002.
- b11. Hemley, R.J., M.I. Eremets and H.K. Mao, Progress in experimental studies of insulator-metal transitions at megabar pressures, *Frontier of High Pressure Research II: Application of High Pressure to Low-Dimensional Novel Electronic Materials*, vol. edited by H. D. H. e. a. (eds.), pp. 201-216, Kluwer Acad. Publ., Netherlands 2001

- b12. Mao, H.K., and R.J. Hemley, Ultrahigh pressure research: a new integrated approach, in *Proc. 8th NIRIM Int. Symp. Adv. Materials (ISAM 2001): Ultra-High Pressure Research --Novel Process for New Materials--*, edited by M. Akaishi, T. Sekine, K. Takemura, T. Taniguchi, T. Kobayashi, K. Tajima, and N. Aida, pp. 57-58, Nat. Inst. Res. Inorg. Materials, Tsukuba, Japan, 2001.
- b13. Matsuishi, K., A. Masui, T. Suzuki, S. Onari, R. J. Hemley and H. K. Mao, Pressure effects on structures and excitons of lead-iodide based self-organized quantum structures, *Proc. 8th NIRIM Int. Symp. Adv. Materials (ISAM 2001): Ultra-High Pressure Research --Novel Process for New Materials--*, vol. edited by M. Akaishi, T. Sekine, K. Takemura, T. Taniguchi, T. Kobayashi, K. Tajima and N. Aida, pp. 117-118, Nat. Inst. Res. Inorg. Materials, Tsukuba, Japan 2001
- b14. Nakano, S., R.J. Hemley, O. Tschauner, and H.K. Mao, High-pressure/high-temperature transformations of boron hydride, in *Proc. 8th NIRIM Int. Symp. Adv. Materials (ISAM 2001): Ultra-High Pressure Research --Novel Process for New Materials--*, edited by M. Akaishi, T. Sekine, K. Takemura, T. Taniguchi, T. Kobayashi, K. Tajima, and N. Aida, pp. 49-50, Nat. Inst. Res. Inorg. Materials, Tsukuba, Japan, 2001.
- b15. Soignard, E., M. Somayazulu, H.K. Mao, J. Dong, O.F. Sankey, and P.F. McMillan, High pressure-high temperature studies of nitride spinels in the $\text{Si}_3\text{N}_4\text{-Ge}_3\text{N}_4$ system, in *Proc. 8th NIRIM Int. Symp. Adv. Materials (ISAM 2001): Ultra-High Pressure Research --Novel Process for New Materials--*, edited by M. Akaishi, T. Sekine, K. Takemura, T. Taniguchi, T. Kobayashi, K. Tajima, and N. Aida, pp. 35-36, Nat. Inst. Res. Inorg. Materials, Tsukuba, Japan, 2001.
- b16. Goncharov, A.F., V.V. Struzhkin, R.J. Hemley, H.K. Mao and Z. Liu, Advances in optical spectroscopy at multimegabar pressures, *17th AIRAPT Conference*, vol. 1, edited by M.H. Manghnani, W.J. Nellis and M.F. Nicol, pp. 90-95, University Press (India) Limited, Honolulu, HI 2000.
- b17. Hemley, R.J., A.F. Goncharov, Z. Liu, H.K. Mao and S. Merkel, High-pressure infrared synchrotron and Raman microspectroscopy of Earth and planetary materials, in *Microbeam Analysis 2000: Proceedings of the 2nd Conference of the International Union of Microbeam Analysis Societies*, edited by D.B. William and R. Shimizu, pp. 87-88, IOP Publishing, Bristol, 2000.
- b18. Hemley, R.J., H.K. Mao, A.F. Goncharov, M. Eremets, and V.V. Struzhkin, The Raman probe of ultrahigh-pressure phenomena, in *Proceedings of the Seventeenth International Conference on Raman Spectroscopy (ICORS 2000)*, edited by S.L. Zhang, and B. Zhu, pp. 13-16, John Wiley & Sons, Chichester and New York, 2000.
- b19. Hu, J. Z., H. K. Mao, Q. Z. Guo and R. J. Hemley, High pressure x-ray diffraction at X17C of the NSLS, *Proceedings of AIRAPT 17*, vol. 2, edited by M. H. Manghnani, W. J. Nellis and M. F. Nicol, pp. 1039-1042, Universities Press (India) Limited, Honolulu, HI 2000.
- b20. Huotari, S., K. Hämäläinen, J. Laukkanen, A. Soininen, S. Manninen, C.C. Kao, T. Buslaps, M. Mezouar and H.K. Mao, High-pressure compton scattering, *Proceeding of AIRAPT 17*, vol. 2, edited by M.H. Manghnani, W.J. Nellis and M.F. Nicol, pp. 1017-1020, Universities Press (India) Limited, Honolulu, HI 2000.
- b21. Liu, H.Z., C.Q. Jin, J.F. Shu, J.Z. Hu, H.K. Mao, Y.H. Zhao and L.H. Wang, Nanocrystalline selenium under high pressure, *Proceedings of AIRAPT 17*, vol. 1, edited by M.H. Manghnani, W.J. Nellis and M.F. Nicol, pp. 495-497, Universities Press (India) Limited, Honolulu, HI 2000.
- b22. Merkel, S., R.J. Hemley, H.K. Mao and D.M. Teter, Finite element modeling and ab initio calculations of megabar stresses in the diamond anvil cell, *17th AIRAPT Conference*, vol. 1, edited by M.H. Manghnani, W.J. Nellis and M.F. Nicol, pp. 68-73, University Press (India) Limited, Honolulu, HI 2000.
- b23. Sasaki, J.M., T.P.C. Freire, A.J.D. Moreno, F.E.A. Melo, I. Guedes, J. Mendes-Filho, J. Shu, J. Hu, and H.K. Mao, Single crystal x-ray diffraction in monohydrate L-asparagine under hydrostatic pressure, in *Science and Technology of High Pressure: Proceedings of AIRAPT 17*, edited by M.H. Manghnani, W.J. Nellis, and M.F. Nicol, pp. 502-505, Universities Press (India) Limited, Honolulu, HI, 2000.
- b24. Tang, J., T. Kikekawa, J.Z. Hu, J.F. Shu, H.K. Mao, T. Furubayashi, A. Matsushita, T. Matsumoto, S. Nagata and N. Matsumoto, Pressure-induced structural phase transition in CuIr_2Se_4 , *Proceeding*

of AIRAPT 17, vol. 1, edited by M.H. Manghnani, W.J. Nellis and M.F. Nicol, pp. 506-509, Universities Press (India) Limited, Honolulu, HI 2000.

- b25. Zou, G., Y.Z. Ma, H.K. Mao, J.Z. Hu, S.M. Somayazulu and R.J. Hemley, application of diamond gasket on the XRD study at high pressure and high temperature, *Proceedings of AIRAPT 17*, vol. 2, edited by M.H. Manghnani, W. J. Nellis and M. F. Nicol, pp. 1107-1108, Universities Press (India) Limited, Honolulu, HI 2000.
- b26. Hemley, R.J., H.K. Mao, M. Somayazulu, Y. Ma, P. McMillan and G.H. Wolf, Investigations of new materials at high pressures and temperatures, *Proc. 6th NIRIM Int. Symp. Adv. Materials (ISAM '99): New Semiconducting Materials: Diamond and Related Materials*, vol. edited by Y. Bando, pp. 15-16, Nat. Inst. Res. Inorg. Materials, Tsukuba, Japan 1999.
- b27. Hemley, R.J., H.K. Mao, M.S. Somayazulu, Y. Ma, P.F. McMillan, and G.H. Wolf, Investigations of new ceramic materials at high pressures and temperatures, in *Advanced Materials '99 - New Semiconducting Materials: Diamond and Related Materials*, edited by Y. Bando, pp. 15-16, National Institute for Research in Inorganic Materials, Tsukuba, Japan, 1999.
- b28. Lu, R., A.F. Goncharov, R.J. Hemley and H.K. Mao, Synchrotron infrared microspectroscopy: Application to hydrous minerals, *Synchrotron x-ray methods in clay science.*, vol. 9, edited by D. Schulze, J.W. Stuck and P.M. Bertsch, pp. 165-182, The Clay Minerals Society, Boulder, CO 80306 1999.
- b29. Singh, A.K., C. Balasingh, H.K. Mao, R.J. Hemley and T.S. Duffy, Measurement and analysis of lattice strains in a polycrystalline sample under ultra-high pressure, *Proceedings of the International School on Powder Diffraction*, pp. 64-77, Allied Publishers Ltd., New Delhi 1999.
- b30. Duffy, T., G. Shen, D.L. Heinz, Y. Ma, R.J. Hemley and H.K. Mao, Lattice strains in gold and rhenium under non-hydrostatic compression, *High-Pressure Material Research*, vol. 499, edited by R.M. Wentzcovitch, R.J. Hemley, W.J. Nellis and P.Y. Yu, pp. 145-150, Mat. Res. Soc., Warrendale, Pa. 1998.
- b31. Hemley, R.J. and H.K. Mao, Static compression experiments on low-Z planetary materials, *Properties of the Earth and Planetary Materials at High Pressure and Temperature*, vol. Geophys. Monograph 101, edited by M.H. Manghnani and T. Yagi, pp. 173-183, Am. Geophys. Union, Washington, DC 1998.
- b32. Hemley, R.J., H.K. Mao and R.E. Cohen, High-pressure electronic and magnetic properties, *Ultrahigh-Pressure Mineralogy: Physics and Chemistry of the Earth's Deep Interior*, vol. edited by R.J. Hemley, pp. 591-638, Mineralogical Society of America, Washington, D. C. 1998.
- b33. Mao, H.K. and R.J. Hemley, New windows on the Earth's deep interior, *Ultrahigh-Pressure Mineralogy: Physics and Chemistry of the Earth's Deep Interior*, vol. edited by R. J. Hemley, pp. 1-32, Mineralogical Society of America, Washington, D. C. 1998.
- b34. Mao, H.K., G. Shen, R.J. Hemley and T.S. Duffy, X-ray diffraction with a double hot-plate laser-heated diamond cell, *Properties of the Earth and Planetary Materials at High Pressure and Temperature*, vol. Geophys. Monograph 101, edited by M.H. Manghnani and T. Yagi, pp. 27-34, Am. Geophys. Union, Washington, DC 1998.
- b35. Singh, A.K., C. Balasingh, H.K. Mao, J. Shu and R.J. Hemley, Interpretation of the lattice strains measured under non-hydrostatic pressure, *The Review of High Pressure Science and Technology -- Proceedings of AIRAPT-16 and HPCJ-38 Conference*, vol. 7, edited by M. Nakahara, pp. 205-210, Japan Soc. High Pressure Sci. Tech., Kyoto, JAPAN 1998.
- b36. Zha, C.-S., H.K. Mao, R.J. Hemley and T.S. Duffy, Recent progress in high-pressure Brillouin scattering: olivine and ice, *The Review of High Pressure Science and Technology -- Proceedings of AIRAPT-16 and HPCJ-38 Conference*, vol. 7, edited by M. Nakahara, pp. 739-741, Japan Soc. High Pressure Sci. Tech., Kyoto, JAPAN 1998.
- b37. Zha, C.S., T.S. Duffy, R.T. Downs, H.K. Mao, R.J. Hemley and D.J. Weidner, Single-crystal elasticity of the α and β of Mg_2SiO_4 polymorphs at high pressure, *Properties of the Earth and Planetary Materials at High Pressure and Temperature*, vol. Geophys. Monograph 101, edited by M.H. Manghnani and T. Yagi, pp. 9-16, Am. Geophys. Union, Washington, DC 1998.

- b38. Hemley, R.J. and H.K. Mao, Static high-pressure effects in solids, *Encyclopedia of Applied Physics*, vol. 18, edited by pp. 555-572, VCH Publishers, Inc., New York 1997.
- b39. Mao, H.K. and R.J. Hemley, High pressure and synchrotron radiation: the new era of megabar research, *NSLS Newsletter*, July, 4-13, 1997.
- b40. Mao, H.K., R.J. Hemley and A.L. Mao, Diamond-cell research with synchrotron radiation, *Advances in High Pressure Research in Condensed Matter --Proceedings of the International Conference on Condensed Matter under High Pressures*, vol. edited by S.K. Sikka, S.C. Gupta and B.K. Godwal, pp. 12-19, National Institute of Science Communication, New Delhi 1997.
- b41. Goncharov, A.F., I.I. Mazin, J.H. Eggert, R.J. Hemley and H.K. Mao, Orientational order, disorder and possible glassy behavior in dense deuterium, *High Pressure Science & Technology -- Proceedings of the Joint XV AIRAPT & XXXIII EHPRG International Conf.*, vol. edited by W.A. Trzeciakowski, pp. 533-535, World Scientific Publ. Co., Singapore 1996.
- b42. Goncharov, A.F., M. Somayazulu, V.V. Struzhkin, R.J. Hemley and H.K. Mao, New high-pressure low-temperature phase of methane, *Fifteenth International Conference on Raman Spectroscopy*, vol. edited by S.A. Asher and P. Stein, pp. 1042-1043, John Wiley & Sons, 1996.
- b43. Hemley, R.J. and H.K. Mao, High-pressure Raman spectroscopy: New windows on matter under extreme conditions, *Fifteenth International Conference on Raman Spectroscopy*, vol. edited by S.A. Asher and P. Stein, pp. 1032-1033, John Wiley & Sons, 1996.
- b44. Mao, H.K. and R.J. Hemley, Solid hydrogen at ultrahigh pressures, *High Pressure Science & Technology -- Proceedings of the Joint XV AIRAPT & XXXIII EHPRG International Conf.*, vol. edited by W.A. Trzeciakowski, pp. 505-510, World Scientific Publ. Co., Singapore 1996.
- b45. Shen, G., H.K. Mao and R.J. Hemley, Laser-heating diamond-anvil cell technique: Double-sided heating with multimode Nd:YAG laser, *Advanced Materials '96 - New Trends in High Pressure Research* -, vol. edited by pp. 149-152, Nat. Inst. Res. Inorganic Mat., Tsukuba, Japan 1996.
- b46. Struzhkin, V.V., Y.A. Timofeev, R.T. Downs, R.J. Hemley and H.K. Mao, $T_c(P)$ from magnetic susceptibility measurements in high temperature superconductors: $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ and $\text{HgBa}_2\text{Ca}_2\text{Cu}_3\text{O}_{8+x}$, *High Pressure Science & Technology -- Proceedings of the Joint XV AIRAPT & XXXIII EHPRG International Conf.*, vol. edited by W.A. Trzeciakowski, pp. 682-684, World Scientific Publ. Co., Singapore 1996.
- b47. Duffy, T.S., R.J. Hemley and H.K. Mao, Structure and Bonding in hydrous minerals at high pressure: Raman spectroscopy of alkaline earth hydroxides, *Volatiles in the Earth and Solar System*, vol. edited by K.A. Farley, pp. 211-220, Am. Inst. Physics, New York 1995.
- b48. Hemley, R.J. and H.K. Mao, Progress on hydrogen at ultrahigh pressures, *Oji Seminar Volume: Elementary Processes in Dense Plasmas*, vol. edited by S. Ichimaru and S. Ogata, pp. 271-282, Addison-Wesley Pub. Co., Tokyo 1995.
- b49. Hemley, R.J., H.K. Mao, T.S. Duffy, J.H. Eggert, A.F. Goncharov, M. Hanfland, M. Li, M. Somayazulu, W. Vos and C.S. Zha, Dense hydrogen in the outer solar system: Implications from recent high-pressure experiments, *Volatiles in the Earth and Solar System*, vol. edited by K.A. Farley, pp. 250-260, Am. Inst. Physics, New York 1995.
- b50. Eggert, J.H., R.J. Hemley, H.K. Mao and J.L. Feldman, Rotation-vibration and intermolecular dynamics of hydrogen and deuterium, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G. A. Samara and M. Ross, pp. 845-848, AIP Press, New York 1994.
- b51. Eggert, J.H., R.J. Hemley and H.K. Mao, Raman scattering evidence for a new phase transition in normal deuterium at high pressures, *Proceeding of the Fourteenth International Conference on Raman Spectroscopy*, vol. edited by N.-T. Yu and X.-Y. Li, pp. 1008-1009, John Wiley & Sons, New York 1994.
- b52. Hanfland, M., R.J. Hemley and H.K. Mao, Synchrotron infrared measurements of pressure-induced transformations in solid hydrogen, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 877-880, AIP Press, New York 1994.

- b53. Hu, J., H.K. Mao, J. Shu and R.J. Hemley, High pressure energy dispersive x-ray diffraction technique with synchrotron radiation, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 441-444, AIP Press, New York 1994.
- b54. Kingma, K. J., R. J. Hemley, D. R. Veblen and H.K. Mao, High-pressure crystalline transformations and amorphization in α -quartz, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 39-42, AIP Press, New York 1994.
- b55. Mao, H.K. and R.J. Hemley, Raman scattering from high pressure solids of hydrogen and deuterium, *Proceeding of the Fourteenth International Conference on Raman Spectroscopy*, vol. edited by N.-T. Yu and X.-Y. Li, pp. 828-829, John Wiley & Sons, New York 1994.
- b56. Mao, H.K. and R.J. Hemley, Material science at ultrahigh pressures, *Advanced Materials '94, Proceeding of ISAM94 International Symposium on Advanced Materials '94*, vol. edited by M. Kamo, H. Kanda, Y. Matsui and T. Sekine, pp. 229-234, International Comm. Specialists, Inc., Tokyo 1994.
- b57. Mao, H.K., R.J. Hemley and A.L. Mao, Recent design of ultrahigh-pressure diamond cell, *High Pressure Science and Technology --1993*, vol. 2, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 1613-1616, AIP Press, New York 1994.
- b58. Vos, W.L., L.W. Finger, R.J. Hemley, H.K. Mao and H.S. Yoder, Phase behavior of H_2 - H_2O at high pressure, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 857-860, AIP Press, New York 1994.
- b59. Zha, C.S., T.S. Duffy, H.K. Mao and R.J. Hemley, High-pressure Brillouin scattering and elastic constants of single-crystal hydrogen to 24 GPa, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 873-876, AIP Press, New York 1994.
- b60. Zha, C.S., R.J. Hemley, H.K. Mao, T.S. Duffy and C. Meade, Brillouin scattering of silica glass to 57.5 GPa, *High Pressure Science and Technology --1993*, vol. 1, edited by S.C. Schmidt, J.W. Shaner, G.A. Samara and M. Ross, pp. 93-96, AIP Press, New York 1994.
- b61. Hemley, R.J., H.K. Mao, M. Hanfland, J.H. Eggert, C.S. Zha and J.F. Shu, Experimental investigations of dense solid hydrogen, *Strongly Coupled Plasma Physics*, vol. edited by H. VanHorn and S. Ichimaru, pp. 3-10, Univ. Rochester Press, Rochester, N.Y. 1993.
- b62. Badding, J. V., H. K. Mao and R. J. Hemley, High-pressure crystal structure and equation of state of iron hydride: implications for the Earth's core, *High Pressure Research: Application to Earth and Planetary Sciences*, vol. Geophys. Monograph 67, Mineral Phys. vol 3, edited by Y. Syono and M. H. Manghnani, pp. 363-372, Terra Sci. Publ. Co., Tokyo 1992.
- b63. Hemley, R. J. and H. K. Mao, Static compression to multimegabar pressures, *Shock Compression of Condensed Matter*, vol. edited by S. C. Schmidt, R. D. Dick, J. W. Forbes and D. G. Tasker, pp. 27-38, Elsevier Science Publishers B. V., 1992.
- b64. Hemley, R. J. and H. K. Mao, Raman studies of dense hydrogen: constraints on structure, dynamics and metallization, *ICORS Wurzburg '92, XIII International Conference on Raman Spectroscopy*, vol. edited by W. Kiefer, pp. 762-763, Wiley, Chichester and New York 1992.
- b65. Hemley, R. J., L. Stixrude, Y. Fei and H. K. Mao, Constraints on lower mantle composition from P - V - T measurements of $(Fe,Mg)SiO_3$ -perovskite and $(Fe,Mg)O$, *High Pressure Research in Mineral Physics: Application to Earth and Planetary Sciences*, vol. Geophys. Monograph 67, Mineral Phys. vol 3, edited by Y. Syono and M. H. Manghnani, pp. 183-190, Terra Sci. Publ. Co., Tokyo 1992.
- b66. Hemley, R.J., and H.K. Mao, Metallic hydrogen, in *McGraw-Hill Yearbook of Science and Technology*, pp. 207-209, McGraw-Hill, New York, 1992.
- b67. Skelton, E. F., J. D. Ayers, S. B. Qadri, K. P. Cooper, J. Z. Hu, L. W. Finger and H. K. Mao, X-ray diffraction from a single crystal of 28 attoliters, possibly under several GPa pressure, *Recent Trends in High Pressure Research*, vol. edited by A. K. Singh, pp. 172-174, Oxford & IBH Publishing Co., Pvt. Ltd., New Delhi, India 1992.

- b68. Skelton, E. F., J. D. Ayers, S. B. Qadri, J. Z. Hu, L. W. Finger and H. K. Mao, X-ray diffraction from a 28 attoliter crystal volume, *Advances in X-Ray Analysis*, vol. 35, edited by C. S. Barrett, pp. 617-621, Plenum Press, New York 1992.
- b69. Hemley, R. J., H. K. Mao and M. Hanfland, Spectroscopic investigations of the insulator-metal transition in solid hydrogen, *Molecular Systems under High Pressure, Proceeding of the II Archimedes Workshop "Molecular solid under pressure", Catania, May 21-31, 1990*, vol. edited by R. Pucci and G. Piccitto, pp. 223-243, Elsevier, Amsterdam 1991.
- b70. Mao, H. K., Y. Wu, L. C. Chen, J. F. Shu and R. J. Hemley, Pressure calibration to 304 GPa on the basis of x-ray diffraction measures of Pt, Fe and CsI, *High Pressure Res., International AIRAPT Conference, XIIth, Paderborn, West Germany, July 18-21, 1989*, 5, 773-775, 1990.
- b71. Hemley, R. J., R. E. Cohen, A. Yeganeh-Haeri, H. K. Mao, D. J. Weidner and E. Ito, Raman spectroscopy and lattice dynamics of MgSiO₃ perovskite at high pressure, *Perovskite: A Structure of Great Interest to Geophysics and Materials Science*, vol. edited by A. Navrotsky and D. J. Weidner, pp. 35-53, American Geophysical Union, Washington, D. C., 1989.
- b72. Hemley, R. J., A. P. Jephcoat, C. S. Zha, H. K. Mao, L. W. Finger and D. E. Cox, Equation of state of solid neon from x-ray diffraction measurements to 110 GPa, *High Pressure Science and Technology, Proceedings of the XIth AIRAPT Conference*, vol. Vol. 3, edited by N. V. Novikov and Y. M. Chistyakov, pp. 211-217, Naukova Dumka, Kiev 1989.
- b73. Mao, H. K., Static compression of simple molecular systems in the megabar range, *Simple Molecular Systems at Very High Density*, vol. edited by P. Loubeyre and A. Polian, pp. 221-236, Plenum Publishing Corp., NY, 1989.
- b74. Bell, P. M., H. K. Mao and J. A. Xu, Error analysis of parameter-fitting in equations of state for mantle minerals, *High-Pressure Research in Mineral Physics*, vol. edited by M. H. Manghnani and Y. Syono, pp. 447-454, Terra Scientific, Tokyo/American Geophysical Union, Washington, D. C. 1987.
- b75. Jephcoat, A. P., H. K. Mao and P. M. Bell, Operation of the megabar diamond-anvil cell, *Hydrothermal Experimental Techniques, Chap. 19*, vol. edited by G. C. Ulmer and H. L. Barnes, pp. 469-506, Wiley-Interscience, New York 1987.
- b76. Mao, H. K., P. M. Bell and C. Hadidiacos, Experimental phase relations of iron to 360 kbar, 1400°C determined in an internally heated diamond-anvil apparatus, *High-Pressure Research in Mineral Physics*, vol. edited by M. H. Manghnani and Y. Syono, pp. 135-138, Terra Scientific, Tokyo/American Geophysical Union, Washington, D. C. 1987.
- b77. VanValkenburg, A., P. M. Bell and H. K. Mao, High-pressure mineral solubility experiments in the diamond-window cell, *Hydrothermal Experimental techniques, Chapter 18*, vol. Chap. 18, edited by G. C. Ulmer and H. L. Barnes, pp. 458-468, Wiley-Interscience, New York 1987.
- b78. Bell, P. M., J. Xu and H. K. Mao, Static compression of gold and copper and calibration of the ruby pressure scale to pressures to 1.8 megabars, *Proc. 4th Amer. Phys. Soc. (APS) Topical Conf. on Shock Waves in Condensed Matter*, vol. edited by Y. Gupta, pp. 125-130, Plenum Publishing Corp., New York 1986.
- b79. Mao, H. K., K. A. Goettel and P. M. Bell, Ultra-high pressure experiments at pressures exceeding 2 megabars, *Proceedings of the International Symposium on Solid State Physics under Pressure*, vol. edited by S. Minomura, pp. 11-17, KTK Scientific Publishers, Dordrecht Boston Lancaster, Tokyo 1985.
- b80. Mao, H. K., J. Xu and P. M. Bell, Pressure-induced infrared spectra of hydrogen to 542 kbar, *High Pressure in Science and Technology, part 3*, vol. edited by C. Homan, R. K. MacCrone and E. Whalley, pp. 327-331, North-Holland Publishing Co., NY, 1984.
- b81. Dunn, K. J., R. M. Chrenko, H. K. Mao and P. M. Bell, The profilometry technique for measuring the yield strength of hard materials, *High Pressure Science and Technology, Vol. 1*, vol. 1, edited by B. Vodar and P. Marteau, pp. 181-182, Pergamon Press, NY, 1982.
- b82. Mao, H. K., P. M. Bell and T. Yagi, Iron-magnesium fractionation model for the earth, *High-Pressure Research in Geophysics, Vol. 12*, vol. edited by S. Akimoto and M. H. Manghnani, pp. 319-325, Center for Academic Publications, Tokyo, Japan 1982.

- b83. Shimizu, H., E. M. Brody, H. K. Mao and P. M. Bell, Brillouin measurements of n-H₂ and n-D₂ in the pressure range 0.5 to 20 GPa at room temperature, *High-Pressure Research in Geophysics, Vol. 12*, vol. edited by S. Akimoto and M. H. Manghnani, pp. 135-145, Center for Academic Publications, Tokyo, Japan 1982.
- b84. Strens, R. G. J., P. M. Bell and H. K. Mao, Quantitative spectra and optics of some meteoritic and terrestrial titanian clinopyroxenes, *Advances in Physical Geochemistry*, vol. Vol. 2, edited by S. K. Saxena, pp. 327-346, Springer-Verlag, NY, 1982.
- b85. Yagi, T., H. K. Mao and P. M. Bell, Hydrostatic compression of perovskite-type MgSiO₃, *Advances in Physical Geochemistry*, vol. edited by S. K. Saxena, pp. 317-325, Springer-Verlag, NY, 1982.
- b86. Zou, G., H. K. Mao, L. W. Finger, P. M. Bell and R. M. Hazen, Interatomic potentials for solid argon and neon at high pressure, *Physics of Solids under High Pressure*, vol. edited by J. S. Schilling and R. N. Shelton, pp. 137-140, North-Holland Publishing Co., Amsterdam 1981.
- b87. Mao, H. K. and P. M. Bell, Design of the diamond-window high-pressure apparatus for cryogenic experiments, *High Pressure Science and Technology*, vol. edited by B. Vodar and P. Marteau, pp. 15-17, Pergamon Press, NY, 1980.
- b88. Sharma, S. K., H. K. Mao and P. M. Bell, Raman spectra of supercritical phases and crystalline solids of n-H₂ and n-D₂ under very high pressures, *High Pressure Science and Technology*, vol. edited by B. Vodar and P. Marteau, pp. 1101-1103, Pergamon Press, NY, 1980.
- b89. Mao, H. K., P. M. Bell, J. Shaner and D. Steinberg, A system of pressure calibration for the range 0.05-1.0 Mbar based on shock wave equations of state for Cu, Mo, Pd, and Ag, *High-Pressure Science and Technology*, vol. Vol. 1, edited by R. D. Timmerhaus and M. S. Barber, pp. 739-747, Plenum, NY, 1979.
- b90. Bell, P. M., H. K. Mao, R. M. Hazen and A. L. Mao, The Luna 24 sample from Mare Crisium: new structural features in lunar glasses deduced from a study of crystal-field spectra, *Mare Crisium: The View from Luna 24*, vol. edited by R. B. Merrill and J. J. Papike, pp. 265-280, Pergamon Press, NY, 1978.
- b91. Hazen, R. M., P. M. Bell and H. K. Mao, Effects of compositional variation on absorption spectra of lunar pyroxenes, *Proc. Ninth Lunar Planet. Sci. Conf.*, vol. edited by pp. 2919-2934, Pergamon Press, New York 1978.
- b92. Bell, P. M. and H. K. Mao, Compression experiments on MgO and ruby with the diamond-window pressure cell to 1 megabar, *High-Pressure Research: Applications to Geophysics*, vol. edited by M. H. Manghnani and S. Akimoto, pp. 509-518, Academic Press, Inc., NY, 1977.
- b93. Hazen, R. M., H. K. Mao and P. M. Bell, Effects of compositional variation on absorption spectra of lunar olivines, *Proc. 8th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 8)*, vol. 1, edited by pp. 1081-1090, Pergamon Press, New York 1977.
- b94. Mao, H. K. and P. M. Bell, Disproportionation equilibrium in iron-bearing systems at pressures above 100 kbar with applications to chemistry of the earth's mantle, *Energetics of Geological Processes*, vol. edited by S. K. Saxena and S. Bhattacharji, pp. 236-249, Springer-Verlag, Inc., New York, NY 1977.
- b95. Mao, H. K. and P. M. Bell, Techniques of electrical conductivity measurement to 300 kbar, *High-Pressure Research: Applications to Geophysics*, vol. edited by M. H. Manghnani and S. Akimoto, pp. 493-502, Academic Press, Inc., New York 1977.
- b96. Bell, P. M., H. K. Mao and R. A. Weeks, Optical spectra and electron paramagnetic resonance of lunar and synthetic glasses: a study of the effect of controlled atmosphere, composition, and temperature, *Proc. 7th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 7)*, vol. 3, edited by pp. 2543-2560, Pergamon Press, New York 1976.
- b97. Mao, H. K., Charge-transfer processes at high pressure, *The Physics and Chemistry of Rocks and Minerals*, vol. edited by R. G. J. Strens, pp. 573-581, John Wiley and Sons, Inc., NY, 1976.
- b98. Mao, H. K. and P. M. Bell, Lunar metallic phase: compositional variation in response to disequilibrium in regolith melting processes, *Proc. 7th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 7)*, vol. 1, edited by pp. 857-862, Pergamon Press, New York 1976.

- b99. Bell, P. M., H. K. Mao, E. Roedder and P. W. Weiblen, The problem of the origin of symplectites in olivine-bearing lunar rocks, *Proc. 6th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 6)*, vol. edited by pp. 231-248, Pergamon Press, New York 1975.
- b100. Bell, P. M., H. K. Mao and G. R. Rossman, Absorption spectroscopy of ionic and molecular units in crystals and glasses, *Infrared and Raman Spectroscopy of Lunar and Terrestrial Minerals*, vol. edited by pp. 1-38, Academic Press, Inc., NY, 1975.
- b101. Bell, P. M., A. El Goresy and H. K. Mao, A study of iron-rich particles on the surfaces of orange glass spheres from 74220, *Proc. 5th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 5)*, vol. 1, edited by pp. 187-191, Pergamon Press, New York 1974.
- b102. Mao, H. K., A. El Goresy and P. M. Bell, Evidence of extensive chemical reduction in lunar regolith samples from the Apollo 17 site, *Proc. 5th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 5)*, vol. 1, edited by pp. 673-683, Pergamon Press, New York 1974.
- b103. Taylor, L. A., H. K. Mao and P. M. Bell, β -FeOOH, akaganeite, in lunar rocks, *Proc. 5th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 5)*, vol. 1, edited by pp. 743-748, Pergamon Press, New York 1974.
- b104. Mao, H. K., D. Virgo and P. M. Bell, Analytical and experimental study of iron and titanium in orange glass from Apollo 17 soil sample 74220, *Proc. 4th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 4)*, vol. 1, edited by pp. 397-412, Pergamon Press, New York 1973.
- b105. Taylor, L. A., H. K. Mao and P. M. Bell, "Rust" in the Apollo 16 rocks, *Proc. 4th Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 4)*, vol. 1, edited by pp. 829-839, Pergamon Press, New York 1973.
- b106. Mao, H. K. and P. M. Bell, Polarized crystal-field spectra of micro particles of the moon, *Am. Soc. Test. Mater. Spec. Tech. Publ.*, 539, 100-119, 1973.
- b107. Bell, P. M. and H. K. Mao, Zoned olivine crystals in an Apollo 15 lunar rock, *The Apollo 15 Lunar Samples*, vol. edited by J. W. Chamberlain and C. Watkins, pp. 26-28, Lunar Science Institute, Houston, TX 1972.
- b108. Bell, P. M. and H. K. Mao, Crystal-field effects of iron and titanium in selected grains of Apollo 12, 14, and 15 rocks, *Proc. 3rd Lunar Sci. Conf. (Geochim. Cosmochim. Acta, Suppl. 3)*, vol. Vol. 1, edited by pp. 545-553, MIT Press, Cambridge, MA 1972.

Carnegie Yearbooks & Annual Reports

(Carnegie Institution of Washington scientists used to publish important new findings mostly in CIW Yearbooks or Annual Reports. The trend gradually changed in late 20th Century. In 1992, CIW terminated the publication of Yearbook, and CIW scientists now publish mostly in journals.)

- c1. Fei, Y., H. K. Mao, R. J. Hemley and J. Shu, Simultaneous high *P-T* diffraction measurements of (Fe,Mg)SiO₃-perovskite and (Fe,Mg)O magnesiowüstite: implications for lower mantle composition, *Ann. Rep. Geophys. Lab.*, 107-114, 1991.
- c2. Hemley, R. J. and H. K. Mao, Evidence for orientational ordering of solid deuterium at high pressures, *Ann. Rep. Geophys. Lab.*, 141-146, 1991.
- c3. Vos, W. L., L. W. Finger, R. J. Hemley, H. K. Mao, J. Hu, J. Shu, R. LeSar, A. d. Kuijper and J. A. Schouten, X-ray diffraction of solid nitrogen-helium mixtures, *Ann. Rep. Geophys. Lab.*, 138-141, 1991.
- c4. Fei, Y., B. O. Mysen and H. K. Mao, Experimental determination of the f_{O_2} of the graphite/diamond-COH fluid buffer up to a pressure of 15 GPa, *Ann. Rep. Geophys. Lab.*, 54-58, 1990.
- c5. Hanfland, M., R. J. Hemley and H. K. Mao, Optical properties of hydrogen at megabar pressures, *Ann. Rep. Geophys. Lab.*, 95-101, 1990.
- c6. Shu, J., H. K. Mao, L. W. Finger and J. Akella, High-pressure x-ray diffraction study of phase transformations in La₂CuO₄, *Ann. Rep. Geophys. Lab.*, 101-103, 1990.

- c7. Chen, L. C., H. K. Mao and R. J. Hemley, Compression and polymorphism of CaSiO_3 at high pressures and temperatures, *Ann. Rep. Geophys. Lab.*, 94-98, 1989.
- c8. Fei, Y., H. K. Mao and B. O. Mysen, Experimental determination of element partitioning and calculated phase relations in the Mg-Fe-Si-O system at high pressure and high temperature, *Ann. Rep. Geophys. Lab.*, 37-42, 1989.
- c9. Hemley, R. J. and H. K. Mao, New optical transition in Type Ia diamonds at very high stresses, *Ann. Rep. Geophys. Lab.*, 105-108, 1989.
- c10. Hemley, R. J. and H. K. Mao, Isotope effects in dense solid hydrogen: phase transition in deuterium at 190 (± 20) GPa, *Ann. Rep. Geophys. Lab.*, 79-82, 1989.
- c11. Mao, H. K., R. J. Hemley, J. Shu, L. C. Chen, A. P. Jephcoat, Y. Wu and W. A. Bassett, The effect of pressure, temperature, and composition on the lattice parameters and density of (Fe,Mg) SiO_3 -perovskite to 30 GPa, *Ann. Rep. Geophys. Lab.*, 82-89, 1989.
- c12. Peng, M., H. K. Mao, L. C. Chen and E. C. T. Chao, The polarized Raman spectra of tourmaline, *Ann. Rep. Geophys. Lab.*, 99-105, 1989.
- c13. Frantz, J. D., Y. Wu, A. C. Thompson, J. C. Underwood, R. D. Giauque, H. K. Mao and Y. G. Zhang, Experimental determination of the compositional limits of immiscibility in the system $\text{CaCl}_2\text{-H}_2\text{O-CO}_2$, *Carnegie Inst. Washington Yearb.*, *Ann. Rep. Geophys. Lab.*, 62-69, 1988.
- c14. Hazen, R. M., L. W. Finger, R. J. Angel, N. L. Ross, C. T. Prewitt, H. K. Mao, C. G. Hadidiacos, D. J. George, D. R. Veblen and P. J. Heaney, Superconductivity in new high- T_c systems: phase identification, *Ann. Rep. Geophys. Lab.*, 99-106, 1988.
- c15. Hemley, R. J., A. P. Jephcoat, H. K. Mao, L. C. Ming and M. H. Manghnani, Pressure-induced amorphization of crystalline silica, *Ann. Rep. Geophys. Lab.*, 77-81, 1988.
- c16. Mao, H. K. and R. J. Hemley, Phase transition in solid molecular hydrogen at ultrahigh pressures, *Ann. Rep. Geophys. Lab.*, 95-99, 1988.
- c17. Mao, H. K., P. M. Bell and K. Weng, Position-sensitive, x-ray diffraction system for high-pressure experiments, *Carnegie Inst. Washington Yearb.*, 82, 424-428, 1983.
- c18. Mao, H. K., P. M. Bell, J. Xu and P. P. Wong, High-pressure, Fourier-transform spectroscopy, *Carnegie Inst. Washington Yearb.*, 82, 419-421, 1983.
- c19. Mao, H. K., C. G. Hadidiacos, P. M. Bell and K. Goettel, Automated system for heating and for spectral measurements in the diamond-window, high-pressure cell, *Carnegie Inst. Washington Yearb.*, 82, 421-424, 1983.
- c20. Mao, H. K., J. Xu and P. M. Bell, Pressure-induced infrared spectra of hydrogen to 542 kbar, *Carnegie Inst. Washington Yearb.*, 82, 366-372, 1983.
- c21. Weng, K., J. Xu, H. K. Mao and P. M. Bell, Preliminary Fourier-transform infrared spectral data on the SiO_6^{8-} octahedral group in silicate-perovskites, *Carnegie Inst. Washington Yearb.*, 82, 355-356, 1983.
- c22. Xu, J., H. K. Mao, K. Weng and P. M. Bell, Preliminary data on the Fourier-transform infrared-frequency shifts in hypersthene at high pressure, *Carnegie Inst. Washington Yearb.*, 82, 352-354, 1983.
- c23. Xu, J., H. K. Mao, K. Weng and P. M. Bell, High-pressure, Fourier-transform infrared spectra of forsterite and fayalite, *Carnegie Inst. Washington Yearb.*, 82, 350-352, 1983.
- c24. Mao, H. K. and P. M. Bell, Generation of megabar static pressures in solid hydrogen, *Carnegie Inst. Washington Yearb.*, 81, 434-436, 1982.
- c25. Mao, H. K., P. M. Bell and N. Z. Boctor, The mineral chemistry of majorite in L6 chondrites, *Carnegie Inst. Washington Yearb.*, 81, 279-281, 1982.
- c26. Weng, K., H. K. Mao and P. M. Bell, Lattice parameters of the perovskite phase in the system $\text{MgSiO}_3\text{-CaSiO}_3\text{-Al}_2\text{O}_3$, *Carnegie Inst. Washington Yearb.*, 81, 273-277, 1982.
- c27. Xu, J., P. M. Bell and H. K. Mao, Infrared spectra of solid carbon dioxide at high pressure, *Carnegie Inst. Washington Yearb.*, 81, 1982, 1982.

- c28. Xu, J., T. C. Hoering, H. K. Mao, P. Wong and P. M. Bell, Fourier-transform infrared measurements of methane at high pressures, *Carnegie Inst. Washington Yearb.*, 81, 389-390, 1982.
- c29. Zou, G., P. M. Bell and H. K. Mao, Hydrostatic pressure calibration, *Carnegie Inst. Washington Yearb.*, 81, 436-437, 1982.
- c30. Zou, G., H. K. Mai and P. M. Bell, Experimental equation of state of crystalline argon at 600 kbar, *Carnegie Inst. Washington Yearb.*, 81, 392-396, 1982.
- c31. Zou, G., H. K. Mao and P. M. Bell, X-ray diffraction data on a phase transition in methane, *Carnegie Inst. Washington Yearb.*, 81, 391-392, 1982.
- c32. Zou, G., H. K. Mao and P. M. Bell, High-pressure study of KFeS_2 , *Carnegie Inst. Washington Yearb.*, 81, 277-278, 1982.
- c33. Bell, P. M. and H. K. Mao, Phase transition in GaAs at high hydrostatic pressures, *Carnegie Inst. Washington Yearb.*, 80, 285-286, 1981.
- c34. Bell, P. M. and H. K. Mao, Degree of hydrostaticity in He, Ne, and Ar pressure-transmitting media, *Carnegie Inst. Washington Yearb.*, 80, 404-406, 1981.
- c35. Bell, P. M., H. K. Mao and S. K. Sharma, The HD reaction at high pressure, *Carnegie Inst. Washington Yearb.*, 80, 294-295, 1981.
- c36. Benjamin, T. M., T. Zou, H. K. Mao and P. M. Bell, Equations of state for thorium metal, UO_2 , and a high-pressure phase of UO_2 to 650 kbar, *Carnegie Inst. Washington Yearb.*, 80, 280-283, 1981.
- c37. Hazen, R.M., H.K. Mao, L.W. Finger and P.M. Bell, Irreversible unit-cell volume changes of wüstite single crystals quenched from high pressure, *Carnegie Inst. Washington Yearb.*, 80, 274-277, 1981.
- c38. Mao, H. K., E. M. Brody, H. Shimizu and P. M. Bell, Elasticity data on hydrogen and deuterium at high pressure (5-200 kbar), *Carnegie Inst. Washington Yearb.*, 80, 286-294, 1981.
- c39. Mao, H. K., G. Zou and P. M. Bell, High-pressure experiments on FeS with bearing on the composition of the earth's core, *Carnegie Inst. Washington Yearb.*, 80, 267-272, 1981.
- c40. Mao, H. K., G. Zou and P. M. Bell, High-pressure phase transformations in selenium and tellurium, *Carnegie Inst. Washington Yearb.*, 80, 283-285, 1981.
- c41. Zou, G., P.M. Bell and H.K. Mao, Application of the solid-helium pressure medium in a study of the α - ϵ Fe transition under hydrostatic pressure, *Carnegie Inst. Washington Yearb.*, 80, 272-274, 1981.
- c42. Zou, G., L. W. Finger, R. M. Hazen and H. K. Mao, Isothermal equations of state for neon and argon, *Carnegie Inst. Washington Yearb.*, 80, 295-299, 1981.
- c43. Brody, E. M., H. Shimizu, H. K. Mao and P. M. Bell, Acoustic velocity and refractive index of fluid hydrogen and deuterium at high pressures, *Carnegie Inst. Washington Yearb.*, 79, 355-358, 1980.
- c44. Hazen, R. M., H. K. Mao, L. W. Finger and P. M. Bell, Crystal structures and compression of Ar, Ne, and CH_4 at 20°C to 90 kbar, *Carnegie Inst. Washington*, 348-351, 1980.
- c45. Mao, H. K. and P. M. Bell, Experiment for in situ high-pressure, light-scattering measurements, *Carnegie Inst. Washington Yearb.*, 79, 411-415, 1980.
- c46. Mao, H. K. and P. M. Bell, Design and operation of a diamond-window, high-pressure cell for the study of single-crystal samples loaded cryogenically, *Carnegie Inst. Washington Yearb.*, 79, 409-411, 1980.
- c47. Sharma, S. K., H. K. Mao and P. M. Bell, Phase transitions in methane under high pressures at room temperature--a Raman spectral study, *Carnegie Inst. Washington Yearb.*, 79, 351-355, 1980.
- c48. Sharma, S. K., H. K. Mao and P. M. Bell, Raman measurements of deuterium in the pressure range 8-537 kbar at room temperature, *Carnegie Inst. Washington Yearb.*, 79, 358-364, 1980.
- c49. Zou, G., H. K. Mao, P. M. Bell and D. Virgo, High-pressure experiments on the iron oxide wüstite (Fe_{1-x}O), *Carnegie Inst. Washington Yearb.*, 79, 374-376, 1980.
- c50. Bell, P. M. and H. K. Mao, Absolute pressure measurements and their comparison with the ruby fluorescence (R_1) pressure scale to 1.5 Mbar, *Carnegie Inst. Washington Yearb.*, 78, 665-669, 1979.

- c51. Bell, P. M., T. Yagi and H. K. Mao, Iron-magnesium distribution coefficients between spinel $(\text{Mg,Fe})_2\text{SiO}_4$, magnesiowüstite $(\text{Mg,Fe})\text{O}$, and perovskite $(\text{Mg,Fe})\text{SiO}_3$, *Carnegie Inst. Washington Yearb.*, 78, 618-621, 1979.
- c52. Boctor, N., P. M. Bell and H. K. Mao, Shock metamorphic features in Pampa del Infierno meteorite., *Carnegie Inst. Washington Yearb.*, 78, 485-488, 1979.
- c53. Dunn, K. J., R. M. Chrenko, R. C. DeVries, P. M. Bell and H. K. Mao, Accurate characterization of the macroscopic flow produced in diamonds at 1.7 Mbar, *Carnegie Inst. Washington Yearb.*, 78, 669-676, 1979.
- c54. Jeanloz, R., R. T. Ahrens, P. M. Bell and H. K. Mao, The B1/B2 transition in CaO from shock-wave and diamond-cell experiments, *Carnegie Inst. Washington Yearb.*, 78, 627-630, 1979.
- c55. Mao, H. K. and P. M. Bell, Observations of the freezing point and density of hydrogen in the pressure range 1 bar to 0.65 Mbar at 25° C, *Carnegie Inst. Washington Yearb.*, 78, 630-632, 1979.
- c56. Mao, H. K. and P. M. Bell, Design of the diamond-window, high-pressure apparatus for cryogenic experiments, *Carnegie Inst. Washington Yearb.*, 78, 659-660, 1979.
- c57. Mao, H. K., P. M. Bell and T. Yagi, Iron-magnesium fractionation model for the earth, *Carnegie Inst. Washington Yearb.*, 78, 621-625, 1979.
- c58. Sharma, S. K., H. K. Mao and P. M. Bell, Raman study of n-H₂ under very high pressures at room temperature, *Carnegie Inst. Washington Yearb.*, 78, 645-649, 1979.
- c59. Yagi, T., P. M. Bell and H. K. Mao, Phase relations in the system MgO-FeO-SiO₂ between 150 and 700 kbar at 1000°C, *Carnegie Inst. Washington Yearb.*, 78, 614-618, 1979.
- c60. Yagi, T., H. K. Mao and P. M. Bell, Hydrostatic compression of MgSiO₃ of perovskite structure, *Carnegie Inst. Washington Yearb.*, 78, 613-614, 1979.
- c61. Yagi, T., H. K. Mao and P. M. Bell, Lattice parameters and specific volume for the perovskite phase of orthopyroxene composition, $(\text{Mg,Fe})\text{SiO}_3$, *Carnegie Inst. Washington Yearb.*, 78, 612-613, 1979.
- c62. Bell, P. M. and H. K. Mao, Static generation of 1.72 megabars pressure, *Carnegie Inst. Washington Yearb.*, 77, 908-913, 1978.
- c63. Bell, P. M., H. K. Mao and R. M. Hazen, Luna 24 glass fragments: a study of soil samples recovered from the Russian Luna 24 mission to Mare Crisium, *Carnegie Inst. Washington Yearb.*, 77, 855-866, 1978.
- c64. Hazen, R. M., P. M. Bell and H. K. Mao, Systematic variations of pyroxene absorption spectra with composition, *Carnegie Inst. Washington Yearb.*, 77, 853-855, 1978.
- c65. King, H. D., D. Virgo and H. K. Mao, High-pressure phase transitions in FeS, using ⁵⁷Fe Mössbauer spectroscopy, *Carnegie Inst. Washington Yearb.*, 77, 830-835, 1978.
- c66. Mao, H. K. and P. M. Bell, Study of lead at high pressure: compressibility and fixed-point transition between the FCC and HCP polymorphs under various degrees of nonhydrostatic stress, *Carnegie Inst. Washington Yearb.*, 77, 842-848, 1978.
- c67. Mao, H. K. and P. M. Bell, Design and varieties of the megabar cell, *Carnegie Inst. Washington Yearb.*, 77, 904-908, 1978.
- c68. Yagi, T., H. K. Mao and P. M. Bell, Isothermal compression of perovskite-type MgSiO₃, *Carnegie Inst. Washington Yearb.*, 77, 835-837, 1978.
- c69. Yagi, T., H. K. Mao and P. M. Bell, Effect of iron on the stability and unit-cell parameters of ferromagnesian silicate perovskite, *Carnegie Inst. Washington Yearb.*, 77, 837-841, 1978.
- c70. Bell, P. M., H. K. Mao and T. Yagi, Crystal structure of MgSiO₃ perovskite, *Carnegie Inst. Washington Yearb.*, 76, 516-519, 1977.
- c71. Hazen, R. M., P. M. Bell and H. K. Mao, Polarized absorption spectra of Angra dos Reis fassaite to 52 kbar, *Carnegie Inst. Washington Yearb.*, 76, 515-516, 1977.
- c72. Hazen, R. M., H. K. Mao and P. M. Bell, Comparison of absorption spectra of lunar and terrestrial olivines, *Carnegie Inst. Washington Yearb.*, 76, 508-512, 1977.

- c73. Mao, H. K. and P. M. Bell, Generation of static pressures to 1.5 Mbar, *Carnegie Inst. Washington Yearb.*, 76, 644-645, 1977.
- c74. Mao, H. K. and P. M. Bell, Static experiments to determine the volume equation of state of four metals (Cu, Mo, Pd, and Ag) and calibration of the ruby R₁ pressure scale, *Carnegie Inst. Washington Yearb.*, 76, 650-654, 1977.
- c75. Mao, H. K. and P. M. Bell, Technique of operating the diamond-window pressure cell: considerations of the design and functions of the diamond anvils, *Carnegie Inst. Washington Yearb.*, 76, 646-650, 1977.
- c76. Mao, H. K. and P. M. Bell, Pressure-volume equations of state of MgO and Fe to 1 Mbar, *Carnegie Inst. Washington Yearb.*, 76, 519-522, 1977.
- c77. Mao, H. K., D. Virgo and P. M. Bell, High-pressure ⁵⁷Fe Mössbauer data on the phase and magnetic transitions of magnesioferrite (MgFe₂O₄), magnetite (Fe₃O₄), and hematite (Fe₂O₃), *Carnegie Inst. Washington Yearb.*, 76, 522-525, 1977.
- c78. Mao, H. K., T. Yagi and P. M. Bell, Mineralogy of the earth's deep mantle: quenching experiments on mineral compositions at high pressure and temperature, *Carnegie Inst. Washington Yearb.*, 76, 502-504, 1977.
- c79. Yagi, T. and H. K. Mao, Crystal-field spectra of the spinel polymorph of Ni₂SiO₄ at high pressure, *Carnegie Inst. Washington Yearb.*, 76, 505-508, 1977.
- c80. Yagi, T., H. K. Mao and P. M. Bell, Crystal structure of MgSiO₃ perovskite, *Carnegie Inst. Washington Yearb.*, 76, 516-519, 1977.
- c81. Bell, P. M. and H. K. Mao, Optical spectra of thin metallic coatings with application to the spectra of lunar soil samples, *Carnegie Inst. Washington Yearb.*, 75, 639-671, 1976.
- c82. Bell, P. M. and H. K. Mao, Crystal-field spectra of fassaite from the Angra dos Reis meteorite, *Carnegie Inst. Washington Yearb.*, 75, 701-705, 1976.
- c83. Bell, P. M., H. K. Mao and R. A. Weeks, A study of the oxidation states of iron and titanium in synthetic glasses of lunar basalt composition, *Carnegie Inst. Washington Yearb.*, 75, 688-695, 1976.
- c84. Bell, P. M., H. K. Mao, R. A. Weeks and A. V. Valkenburg, High-pressure disproportionation study of iron in synthetic basalt glass, *Carnegie Inst. Washington Yearb.*, 75, 515-520, 1976.
- c85. Frantz, J. D. and H. K. Mao, Metasomatic zoning resulting from intergranular diffusion: concentration profiles and the determination of complicated reaction paths in n-component systems, *Carnegie Inst. Washington Yearb.*, 75, 759-764, 1976.
- c86. Huggins, F. E., H. K. Mao and D. Virgo, Gillespite at high pressure: results of a detailed Mössbauer study, *Carnegie Inst. Washington Yearb.*, 75, 756-758, 1976.
- c87. Mao, H. K. and P. M. Bell, Compositional variability of the lunar metallic phase, *Carnegie Inst. Washington Yearb.*, 75, 695-699, 1976.
- c88. Mao, H. K. and P. M. Bell, The ultrahigh-pressure diamond cell: design applications for electrical measurements of mineral samples at 1.2 Mbar, *Carnegie Inst. Washington Yearb.*, 75, 824-827, 1976.
- c89. Mao, H. K. and P. M. Bell, High-pressure research: 1-Mbar pressure on the ruby pressure scale, *Carnegie Inst. Washington Yearb.*, 75, 827-828, 1976.
- c90. Mao, H. K. and P. M. Bell, Compressibility and x-ray diffraction of the epsilon phase of metallic iron (ε-Fe) and periclase (MgO) to 0.9 Mbar pressure, with bearing on the earth's mantle-core boundary, *Carnegie Inst. Washington Yearb.*, 75, 509-513, 1976.
- c91. Rosenhauer, M., H. K. Mao and E. Woermann, Compressibility of magnesiowüstite (Fe_{0.4}Mg_{0.6}O) to 264 kbar, *Carnegie Inst. Washington Yearb.*, 75, 513-515, 1976.
- c92. Weeks, R. A., H. K. Mao and P. M. Bell, Electron paramagnetic resonance of two magnesiowüstites, *Carnegie Inst. Washington Yearb.*, 75, 753-756, 1976.
- c93. Bell, P. M. and H. K. Mao, Analysis of type-B lunar symplectites: garnet composition, *Carnegie Inst. Washington Yearb.*, 74, 595-598, 1975.

- c94. Bell, P. M. and H. K. Mao, Laser optical system for heating experiments and pressure calibration of the diamond-windowed, high-pressure cell, *Carnegie Inst. Washington Yearb.*, 74, 399-402, 1975.
- c95. Bell, P. M. and H. K. Mao, Preliminary evidence of disproportionation of ferrous iron in silicates at high pressures and temperatures 1975, *Carnegie Inst. Washington Yearb.*, 74, 557-559, 1975.
- c96. Bell, P. M., H. K. Mao and S. Haggerty, Trivalent titanium in Apollo 17 samples, *Carnegie Inst. Washington Yearb.*, 74, 593-595, 1975.
- c97. Frantz, J. D. and H. K. Mao, Bimetasomatism resulting from intergranular diffusion: multimineralic zone sequences, *Carnegie Inst. Washington Yearb.*, 74, 417-424, 1975.
- c98. Huggins, F. E., H. K. Mao and D. Virgo, Mössbauer studies at high pressure using the diamond-anvil cell, *Carnegie Inst. Washington Yearb.*, 74, 405-410, 1975.
- c99. Mao, H. K. and P. M. Bell, Contribution of anionic complexes to charge-transfer and associated optical, electrical, and thermal effects at high pressure, *Carnegie Inst. Washington Yearb.*, 74, 559-561, 1975.
- c100. Mao, H. K. and P. M. Bell, High-pressure transformation in magnesioferrite ($MgFe_2O_4$), *Carnegie Inst. Washington Yearb.*, 74, 555-557, 1975.
- c101. Mao, H. K. and P. M. Bell, Crystal-field effects in spinel: oxidation states of iron and chromium, *Geochim. Cosmochim. Acta*, 39, 865-874, 1975.
- c102. Mao, H. K. and P. M. Bell, Design of a diamond-windowed, high-pressure cell for hydrostatic pressures in the range 1 bar to 0.5 Mbar, *Carnegie Inst. Washington Yearb.*, 74, 402-405, 1975.
- c103. Mao, H. K., P. M. Bell and J. Adams, Study of the microfeatures of lunar agglutinate particles, *Carnegie Inst. Washington Yearb.*, 74, 590-593, 1975.
- c104. Rosenhauer, M. and H. K. Mao, Studies on the high-pressure polymorphism of analcite by powder X-ray diffraction and differential thermal analysis methods., *Carnegie Inst. Washington Yearb.*, 74, 413-415, 1975.
- c105. Bell, P. M., A. El Goresy and H. K. Mao, A study of iron-rich particles on the surfaces of orange glass spheres from 74220, *Carnegie Inst. Washington Yearb.*, 73, 464-467, 1974.
- c106. Bell, P. M. and H. K. Mao, Pressure effect on charge-transfer processes in minerals, *Carnegie Inst. Washington Yearb.*, 73, 507-510, 1974.
- c107. Bell, P. M. and H. K. Mao, Oxidation state of iron in a Muon Nong tektite, *Carnegie Inst. Washington Yearb.*, 73, 497-500, 1974.
- c108. Bell, P. M. and H. K. Mao, Crystal-field spectra of Fe^{2+} and Fe^{3+} in synthetic basaltic glass as a function of oxygen fugacity, *Carnegie Inst. Washington Yearb.*, 73, 496-497, 1974.
- c109. Bell, P. M., H. K. Mao and R. W. Weeks, Crystal-field transition and electron paramagnetic resonance of trivalent titanium in iron-free magnesium- aluminum-calcium-silicate glass synthesized under controlled oxygen fugacity, *Carnegie Inst. Washington Yearb.*, 73, 492-496, 1974.
- c110. Frantz, J. D. and H. K. Mao, Metasomatic zoning resulting from intergranular diffusion: a theoretical model, *Carnegie Inst. Washington Yearb.*, 73, 1974, 1974.
- c111. Mao, H. K., A discussion of the iron oxides at high pressure with implications for the chemical and thermal evolution of the earth, *Carnegie Inst. Washington Yearb.*, 510-518, 1974.
- c112. Mao, H. K. and P. M. Bell, Crystal-field effects of ferric iron in goethite and lepidocrocite: band assignment and geochemical applications at high pressure, *Carnegie Inst. Washington Yearb.*, 73, 502-507, 1974.
- c113. Mao, H. K. and P. M. Bell, Crystal-field effects in spinel: oxidation states of iron and chromium, *Carnegie Inst. Washington Yearb.*, 73, 1974.
- c114. Mao, H. K. and P. M. Bell, Crystal-field effects of trivalent titanium in fassaite from the Pueblo de Allende meteorite, *Carnegie Inst. Washington Yearb.*, 73, 488-492, 1974.
- c115. Mao, H. K., A. El Goresy and P. M. Bell, Evidence of extensive chemical reduction in lunar regolith samples from the Apollo 17 site, *Carnegie Inst. Washington Yearb.*, 73, 467-473, 1974.
- c116. Mao, H. K. and F. Seifert, A study of the crystal-field effects of iron in the amphiboles anthophyllite and gedrite, *Carnegie Inst. Washington Yearb.*, 73, 500-502, 1974.

- c117. Taylor, L. A., H. K. Mao and P. M. Bell, Identification of the hydrated iron oxide mineral akaganeite in sample 66095,85, *Carnegie Inst. Washington Yearb.*, 73, 477-480, 1974.
- c118. Abu-Eid, R. M., H. K. Mao and R. G. Burns, Polarized absorption spectra of gillespite at high pressure, *Carnegie Inst. Washington Yearb.*, 72, 564-567, 1973.
- c119. Bell, P. M. and H. K. Mao, Measurements of the polarized crystal-field spectra of ferrous and ferric iron in seven terrestrial plagioclases, *Carnegie Inst. Washington Yearb.*, 72, 574-576, 1973.
- c120. Bell, P. M. and H. K. Mao, Optical and chemical analysis of iron in Luna 20 plagioclase, *Geochim. Cosmochim. Acta*, 37, 755-759, 1973.
- c121. Bell, P. M. and H. K. Mao, Optical absorption studies of the Russian Luna 20 soil, *Carnegie Inst. Washington Yearb.*, 72, 656-662, 1973.
- c122. Bell, P. M. and H. K. Mao, An analytical study of iron in plagioclase from Apollo 16 soils 64501, 64502, and 64802; Apollo 16 rock 66095; and Apollo 15 rock 15475, *Carnegie Inst. Washington Yearb.*, 72, 643-644, 1973.
- c123. Mao, H. K., Electrical and optical properties of the olivine series at high pressure, *Carnegie Inst. Washington Yearb.*, 72, 552-554, 1973.
- c124. Mao, H. K., Thermal and electrical properties of the earth's mantle, *Carnegie Inst. Washington Yearb.*, 72, 557-564, 1973.
- c125. Mao, H. K., Observations of optical absorption and electrical conductivity in magnesiowüstite at high pressures, *Carnegie Inst. Washington Yearb.*, 72, 554-557, 1973.
- c126. Mao, H.K. and P. M. Bell, A study of charge-transfer and crystal-field spectra of iron and titanium in synthetic "basalt" glass as a function of PO₂, *Carnegie Inst. Washington Yearb.*, 72, 629-631, 1973.
- c127. Mao, H. K. and P. M. Bell, Luna 20 plagioclase: crystal-field effects and chemical analysis of iron, *Carnegie Inst. Washington Yearb.*, 72, 662-665, 1973.
- c128. Mao, M. K., D. Virgo and P. M. Bell, Analytical study of the orange lunar soil returned by the Apollo 17 astronauts, *Carnegie Inst. Washington Yearb.*, 72, 631-638, 1973.
- c129. Taylor, L. A., H. K. Mao and P. M. Bell, Rust alteration of the Apollo 16 rocks, *Carnegie Inst. Washington Yearb.*, 72, 638-643, 1973.
- c130. Bell, P. M. and H. K. Mao, Optical and electrical behavior of olivine and spinel (Fe₂SiO₄) at high pressure, *Carnegie Inst. Washington Yearb.*, 71, 520-524, 1972.
- c131. Bell, P. M. and H. K. Mao, Crystal-field studies of lunar samples, *Carnegie Inst. Washington Yearb.*, 71, 480-489, 1972.
- c132. Bell, P. M. and H. K. Mao, Apparatus for the measurement of crystal-field spectra of single crystals, *Carnegie Inst. Washington Yearb.*, 71, 608-611, 1972.
- c133. Bell, P. M. and H. K. Mao, A study of ferric and ferrous irons in three natural pyroxenes and one synthetic pyroxene: crystal-field determinations of Fe³⁺, *Carnegie Inst. Washington Yearb.*, 71, 528-534, 1972.
- c134. Bell, P. M. and H. K. Mao, The hypothesis of melting at stress dislocations in the earth, *Carnegie Inst. Washington Yearb.*, 71, 416-418, 1972.
- c135. Bell, P. M. and H. K. Mao, Zoned olivine crystals in an Apollo 15 lunar rock, *Carnegie Inst. Washington Yearb.*, 71, 470-472, 1972.
- c136. Mao, H. K. and P. M. Bell, Electrical conductivity and the red shift of absorption in olivine and spinel at high pressure, *Science*, 176, 403-406, 1972.
- c137. Mao, H. K. and P. M. Bell, Optical and electrical behavior of olivine and spinel (Fe₂SiO₄) at high pressure, *Carnegie Inst. Washington Yearb.*, 71, 520-524, 1972.
- c138. Mao, H. K. and P. M. Bell, Interpretation of the pressure effect on the optical absorption bands of natural fayalite to 20 kb, *Carnegie Inst. Washington Yearb.*, 71, 524-527, 1972.
- c139. Mao, H. K. and P. M. Bell, Theory of the solubility of minerals at high water pressures, *Carnegie Inst. Washington Yearb.*, 71, 457-459, 1972.

- c140. Mao, H. K. and P. M. Bell, Crystal-field stabilization of the olivine-spinel transition, *Carnegie Inst. Washington Yearb.*, 71, 527-528, 1972.
- c141. Mao, H. K., P. M. Bell and J. J. S. Dickey, Comparison of the crystal-field spectra of natural and synthetic chrome-diopside, *Carnegie Inst. Washington Yearb.*, 71, 538-541, 1972.
- c142. Bell, P. M. and H. K. Mao, Composition of clinopyroxene in the system $\text{NaAlSi}_2\text{O}_6$ - $\text{CaAl}_2\text{Si}_2\text{O}_8$, *Carnegie Inst. Washington Yearb.*, 70, 131, 1971.
- c143. Bell, P. M. and H. K. Mao, Crystal-field spectra, *Carnegie Inst. Washington Yearb* 70, 207-215, 1971.
- c144. Bell, P. M., H. K. Mao and J. L. England, A discussion of pressure distribution in modern solid-pressure-media apparatus, *Carnegie Inst. Washington Yearb.*, 70, 277-281, 1971.
- c145. Mao, H. K. and P. M. Bell, High-pressure decomposition of spinel (Fe_2SiO_4), *Carnegie Inst. Washington Yearb.*, 70, 176-178, 1971.
- c146. Mao, H. K. and P. M. Bell, Generation of magma along faults and stress dislocations in the earth, *Carnegie Inst. Washington Yearb.*, 70, 229-233, 1971.
- c147. Mao, H. K., P. M. Bell and J. L. England, Tensional errors and drift of thermocouple electromotive force in the single-stage, piston-cylinder apparatus, *Carnegie Inst. Washington Yearb.*, 70, 281-287, 1971.
- c148. Taylor, L. A. and H. K. Mao, Observations on the occurrence and stability of smythite, $\text{Fe}_{3.25}\text{S}_4$, *Carnegie Inst. Washington Yearb.*, 70, 290-291, 1971.
- c149. Valkenburg, A. V., H. K. Mao and P. M. Bell, Ikaite ($\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$), a phase more stable than calcite and aragonite (CaCO_3) at high water pressure, *Carnegie Inst. Washington Yearb.*, 70, 237-238, 1971.
- c150. Valkenburg, V., H. K. Mao and P. M. Bell, Solubility of minerals at high water pressures, *Carnegie Inst. Washington Yearb.*, 70, 233-237, 1971.
- c151. Bell, P. M. and H. K. Mao, Subsolvus reactions of jadeite ($\text{NaAlSi}_2\text{O}_6$) and albite ($\text{NaAlSi}_3\text{O}_8$), *Carnegie Inst. Washington Yearb.*, 69, 1680170, 1970.
- c152. Mao, M. K. and P. M. Bell, Behavior of thermocouples in the single-stage piston-cylinder apparatus, *Carnegie Inst. Washington Yearb.*, 69, 207-216, 1970.
- c153. Mao, H. K., The system jadeite ($\text{NaAlSi}_2\text{O}_6$)-anorthite ($\text{CaAl}_2\text{Si}_2\text{O}_8$) at high pressure, *Carnegie Inst. Washington Yearb.*, 69, 163-168, 1970.
- c154. Taylor, L. A. and H. K. Mao, A high-pressure polymorph of troilite, FeS , *Carnegie Inst. Washington Yearb.*, 69, 325-326, 1970.
- c155. Mao, H. K., W. A. Bassett and T. Takahashi, High-pressure phase transformation in magnetite, *Carnegie Inst. Washington Yearb.*, 68, 249-251, 1969.
- c156. Mao, H. K., W. A. Bassett and T. Takahasi, Study of lead up to 180 kb, *Carnegie Inst. Washington Yearb.*, 68, 251-253, 1969.
- c157. Mao, H. K. and P. M. Bell, Crystal-field spectra at high pressure, *Carnegie Inst. Washington Yearb.*, 68, 253-256, 1969.
- c158. Mao, M. K. and J. F. Schairer, Quenching experiments in the systems jadeite ($\text{NaAlSi}_2\text{O}_6$)-forsterite (Mg_2SiO_4) and jadeite ($\text{NaAlSi}_2\text{O}_6$)-anorthite ($\text{CaAl}_2\text{Si}_2\text{O}_8$), *Carnegie Inst. Washington Yearb.*, 68, 221-222, 1969.

Patents

- p1. Hemley, R.J., H.K. Mao, and C.-s. Yan, Tough diamonds and method of making thereof, U. S. Patent 7157067, 2007.
- p2. Hemley, R.J., H.K. Mao, and C.-s. Yan, New diamond uses/applications based on single crystal CVD diamond produced at rapid growth rate, Provisional Patent WO2006US44421, 2007.

- p3. Hemley, R.J., H.K. Mao, and C.-s. Yan, New uses for single-crystal diamond, U.S. Provisional Application No. 60/897,838,, 2007.
- p4. Hemley, R.J., H.K. Mao, and C.-s. Yan, Ultrahard diamonds and method of making thereof, U. S. Patent 7115241, 2006.
- p5. Hemley, R.J., H.K. Mao, and C.-s. Yan, Ultratough CVD single crystal diamond and three dimensional growth thereof, Provisional Patent 20060065187, 2006.
- p6. Hemley, R.J., H.K. Mao, and C.-s. Yan, Colorless single-crystal diamond at rapid growth rate, Provisional Patent WO2006127611, 2006.
- p7. Hemley, R.J., H.K. Mao, and C.-s. Yan, New Diamond Uses/Applications Based on Single-Crystal CVD Diamond Produced at Rapid Growth Rate, U.S. Provisional Application 11/599,361, 2006.
- p8. Hemley, R.J., H.K. Mao, and C.-s. Yan, Annealing single crystal chemical vapor deposition diamonds, Provisional Patent 20050025886, 2005.
- p9. Hemley, R.J., H.K. Mao, C.-s. Yan, and Y.K. Vohra, Apparatus and method for diamond production, U. S. Patent 6858078, 2005.
- p10. Mao, W.L. & H.K. Mao, Composition and method for hydrogen storage, U.S. Patent 6735960, 2004.
- p11. Xu, J.-a. & H.K. Mao, High pressure anvil and optical window, U. S. Patent 6543295, 2003.
- p12. Bell, P.M. & H.K. Mao, Method and apparatus for producing solid hydrogen, U.S. Patent 4386950, 1983.
- p13. Bell, P.M., and H.K. Mao, Apparatus for producing solid hydrogen, U. S. Patent 4339252, 1983.

Thesis and Dissertation

Mao, H. K., The pressure dependence of lattice parameters and volume of ferromagnesian spinels and its implications to the earth's mantle, pp 174, *Ph.D.*, University of Rochester, Rochester, NY, 1967.

Mao, H. K., The pressure dependence of volume and lattice parameters of iron and iron-nickel up to 350 kilobars, 45 pp, *M.S. thesis*, University of Rochester, Rochester, NY, 1966.