

## Papers from HPSTAR

author	title	
L. Zhang, Y. Meng, P. Dera, W. Yang, W. L. Mao, and H. K. Mao	Single-crystal structure determination of (Mg,Fe)SiO <sub>3</sub> postperovskite	Proc. Natl. Acad. Sci. USA 110, 6292–6295 (2013)
D. Tan, W. Zhou, W. Ouyang, Z. Mi, L. Kong, W. Xiao, K. Zhu and B. Chen	Growth of magnesium aluminate nanocrystallites	CrystEngComm 16,1579 (2014)
B. Chen, K. Lutker, J. Lei, J. Yan., S. Yang, and H. K. Mao	Detecting grain rotation at the nanoscale	Proc. Natl. Acad. Sci. USA 111, 3350 (2014)
W. Yang, F. Jia, L.Tang, Q. Tao, Z. Xu, and X. J. Chen	Structural feature controlling superconductivity in compressed BaFe <sub>2</sub> As <sub>2</sub>	J. Appl. Phys. 115, 083915 (2014)
L. Zhang, Y. Meng, W. Yang, L. Wang, W. L. Mao, Q. Zeng, J. S. Jeong, A. J. Wagner, K. A. Mkhoyan, W. Liu, R. Xu, H. K. Mao	Disproportionation of (Mg,Fe)SiO <sub>3</sub> perovskite in Earth's deep lower mantle	Science 344, 877 (2014)
Q. Huang, G. Zhong, J. Zhang, X. Zhao, C. Zhang, H. Lin, and X. J. Chen	Constraint on the potassium content for the superconductivity of potassium-intercalated phenanthrene	J. Chem. Phys. 140, 114301 (2014)
M. Abdel-Hafiez, P. J. Pereira, S. A. Kuzmichev, T. E. Kuzmicheva, V. M. Pudalov, L. Harnagea, A. A. Kordyuk, A. V. Silhanek, V. V. Moshchalkov, B. Shen, H.-H. Wen, A. N. Vasiliev, and X. J. Chen	Lower critical field and SNS-Andreev spectroscopy of 122-arsenides: Evidence of nodeless superconducting gap	Phys. Rev. B 90, 054524 (2014)
Z. Yu, L. Wang, L. Wang, H. Liu, J. Zhao, C. Li, S. Sinogeikin, W. Wu, J. Luo, N. Wang, K. Yang, Y. Zhao, and H. K. Mao	Conventional empirical law reverses in the phase transitions of 122-type iron-based superconductors	Sci. Rep. 4, 7172 (2014)
W. Zhou, X. J. Chen, J. Zhang, X. Li, Y. Wang, and A. F. Goncharov	Vibrational, electronic and structural properties of wurtzite GaAs nanowires under hydrostatic pressure	Sci. Rep. 4, 6472 (2014)
M. Abdel-Hafiez, Y. Zhang, Z. He, J. Zhao, C. Bergmann, C. Krellner, C. G. Duan, X. Lu, H. Luo, P. Dai, and X. J. Chen	Nodeless superconductivity in the presence of spin-density wave in pnictide superconductors: The case of BaFe <sub>2-x</sub> Ni <sub>x</sub> As <sub>2</sub>	Phys. Rev. B 91, 024510 (2015)
Q. Hu, J. Shu, A. Cadien, Y. Meng, W. Yang, H. Sheng, H. K. Mao	Polymorphic phase transition mechanism of compressed coesite	Nat. Commun. 6, 6630 (2015)
M. Abdel-Hafiez, Y. Zhang, Z. Cao, C. Duan, G. Karapetrov, V. M. Pudalov, V. A. Vlasenko, A. V. Sadakov, D. A. Knyazev, T. A. Romanova, D. A. Chareev, O. S. Volkova, A. N. Vasiliev, and X. J. Chen	Superconducting properties of sulfur-doped iron selenide	Phys. Rev. B 91, 165109 (2015)
X. Yan, D. Tan, X. Ren, W. Yang, D. He, and H. K. Mao	Anomalous compression behavior of germanium during phase transformation	Appl. Phys. Lett. 106,171902 (2015)
Z. Zhao, Q. Zeng, H. Zhang, S. Wang, S. Hirai, Z. Zeng, and W. L. Mao	Structural transition and amorphization in compressed α-Sb <sub>2</sub> O <sub>3</sub>	Phys. Rev. B 91, 184112 (2015)

author	title	
Q. Luo, G. Garbarino, B. Sun, D. Fan, Y. Zhang, Z. Wang, Y. Sun, J. Jiao, X. Li, P. Li, N. Mattern, J. Eckert, and J. Shen	Hierarchical densification and negative thermal expansion in Ce-based metallic glass under high pressure	Nat. Commun. 6, 5703 (2015)
Q. Chu, W. Wang, X. Wang, B. Yang, X. Liu, J. Chen	Molybdenum Disulfide	J. Power Sources. 276, 19 (2015)
F. Ke, Q. Wang, J. Zhang, Y. Guo, D. Tan, Y. Li, C. Liu, Yonghao, Y. Ma, X. Chen, and B. Chen	Anomalous variation of electrical transport property and amorphization in dense Alq <sub>3</sub>	RSC Adv. 5, 41359 (2015)
Y. Huang	Spallation caused by the diffusion and agglomeration of vacancies in ductile metals	Mech. Mater. 82, 39 (2015)
Q. Wang, C. Liu, Y. Gao, Y. Ma, Y. Han, and C. Gao	Mixed conduction and grain boundary effect in lithium niobate under high pressure	Appl. Phys. Lett. 106, 132902 (2015)
Q. Wang, C. Liu, B. Ma, Y. Gao, M. Fitzpatrick, Y. Li, B. Liu, C. Gao, and Y. Ma	High pressure study of B <sub>12</sub> As <sub>2</sub> : Electrical transport behavior and the role of grain boundaries	J. Appl. Phys. 117, 045302 (2015)
D. Sang, H. Li, S. Cheng, Q. Wang, J. Liu, Q. Wang, S. Wang, C. Han, K. Chen, and Y. Pan	Ultraviolet photoelectrical properties of n-ZnO nanoros/p-diamond heterojunction	RSC Adv. 5, 49211(2015)
D. Sang, Q. Wang, C. Han, K. Chen, and Y. Pan	Electronic and optical properties of lithium niobate under high pressure: First-principles study	Chin. Phys. B 24, 077104 (2015)
Z. Zhao, H. Zhang, H. Yuan, S. Wang, Y. Lin, Q. Zeng, G. Xu, Z. Liu, G. K. Solanki, K. D. Patel, Y. Cui, H. Y. Hwang, and W. L. Mao	Pressure induced metallization with absence of structural transition in layered molybdenum diselenide	Nat. Commun. 6, 7312 (2015)
D. Fan, J. Xu, Y. Kuang, X. Li, Y. Li, and H. Xie	Compressibility and equation of state of beryl (Be <sub>3</sub> Al <sub>2</sub> Si <sub>6</sub> O <sub>18</sub> ) by using a diamond anvil cell and in situ synchrotron X-ray diffraction	Phys. Chem. Miner. 42, 529 (2015)
W. Bi, J. Zhao, J. F. Lin, Q. Jia, M. Y. Hu, C. Jin, R. Ferry, W. Yang, V. Struzhkin and E. E. Alp	Nuclear resonant inelastic X-ray scattering at high pressure and low temperature	J. Synchrotron Rad. 22, 760 (2015)
L. Kong, G. Liu, S. Zhang, and W. Yang	Origin of the enhanced piezoelectric thermal stability in BiScO <sub>3</sub> -PbTiO <sub>3</sub> single crystals	Appl. Phys. Lett. 106, 232901 (2015)
G. Liu, S. Zhang, W. Jiang, and W. Cao	Losses in ferroelectric materials	Mater. Sci. Eng., R 89, 1(2015)
P. Lei, B. Dai, J. Zhu, G. Tian, X. Chen, Y. Wang, Y. Zhu, G. Liu, L. Yang, and J. Han	Interfacial composition and adhesion of sputtered-Y <sub>2</sub> O <sub>3</sub> film on ZnS substrate	Appl. Surf. Sci. 351, 119 (2015)
G. Liu, P. Lei, B. Dai, J. Zhu, X. Chen, G. Liu, Y. Zhu, J. Han	Controllable phase formation and physical properties of yttrium oxide films governed by substrate heating and bias voltage	Ceram. Int. 41, 8921 (2015)
X. Zhang, J. Zhang, F. Ke, G. Li, Y. Ma, X. Liu, C. Liu, Y. Han, Y. Ma, and C. Gao	Anomalous semiconducting behavior on VO <sub>2</sub> under high pressure	RSC Adv. 5, 54843 (2015)

author	title	
Z. Mao, D. Fan, J. F. Lin, J. Yang, S. N. Tkachev, K. Zhuravlev, V. B. Prakapenka	Elasticity of single-crystal olivine at high pressures and temperatures	Earth Planet. Sci. Lett. 426, 204 (2015)
A. P. Nayak, Z. Yuan, B. Cao, J. Liu, J. Wu, S. T. Moran, T. Li, D. Akinwande, C. Jin, and J. F. Lin	Pressure-Modulated Conductivity, Carrier Density, and Mobility of Multilayered Tungsten Disulfide	ACS Nano. 9, 9117–9123 (2015)
J. Wang, L. Zheng, B. Yang, Z. Luo, X. Lu, G. Liu, R. Zhang, T. Lv, and W. Cao	Domain evolution with electric field and delineation of extrinsic contributions in (K, Na, Li) (Nb, Ta, Sb)O <sub>3</sub> single crystal	Appl. Phys. Lett. 107, 072902 (2015)
L. Kong, G. Liu, W. Yang, and W. Gao	An insight into the origin of low-symmetry bridging phase and enhanced functionality in systems containing competing phases	Appl. Phys. Lett. 107, 042901 (2015)
Y. Wang, X. Lü, W. Yang, T. Wen, L. Yang, X. Ren, L. Wang, Z. Lin, and Y. Zhao	Pressure-Induced Phase Transformation, Reversible Amorphization and Anomalous Visible Light Response in Organolead Bromide Perovskite	J. Am. Chem. Soc. 137, 11144 - 11149 (2015)
J. Zhang, F. Liu, J. Dong, Y. Xu, N. Li, W. Yang, and S. Li	Structural and Transport Properties of the Weyl Semimetal NbAs at High Pressure	Chin. Phys. Lett. 32, 097102 (2015)
J. Liu, J. F. Lin, and V. B. Prakapenka	High-Pressure Orthorhombic Ferromagnesian as a Potential Deep-Mantle Carbon Carrier	Sci. Rep. 5, 7640 (2015)
P. Chow, Y. M. Xiao, E. Rod, L. G. Bai, G. Y. Shen, S. Sinogeikin, N. Gao, Y. Ding, and H. K. Mao	Focusing polycapillary to reduce parasitic scattering for inelastic x-ray measurements at high pressure	Rev. Sci. Instrum. 86, 072203 (2015)
T. Yamanaka, A. Kyono, Y. Nakamoto, S. Kharlamova, V. V. Struzhkin, S. A. Gramsch, H. K. Mao, and R. J. Hemley	New structure of high-pressure body-centered orthorhombic Fe <sub>2</sub> SiO <sub>4</sub>	Am. Mineral. 100, 1736 - 1743, 2015
A. E. Gleason, C. A. Bolme, H. J. Lee, B. Nagler, E. Galtier, D. Milathianaki, J. Hawreliak, R. G. Kraus, J. H. Eggert, D. E. Fratanduono, G. W. Collins, R. Sandberg, W. Yang, and W. L. Mao	Ultrafast visualization of crystallization and grain growth in shock-compressed SiO <sub>2</sub>	Nat. Commun. 6, 8191 (2015)
D. Z. Chen, C. Y. Shi, Q. An, Q. Zeng, W. L. Mao, W. A. Goddard, and J. R. Greer	Fractal atomic-level percolation in metallic glasses	Science 349, 1306 (2015)
K. Li, H. Zheng, L. Wang, C. A. Tulk, J. J. Molaison, M. Feygenson, W. Yang, M. Guthrie, and H. K. Mao	K <sub>3</sub> Fe(CN) <sub>6</sub> under External Pressure: Dimerization of CN- Coupled with Electron Transfer to Fe(III)	J. Phys. Chem. C 119, 22351 - 22356 (2015)
H. Zhang, F. Ke, Y. Li, L. Wang, C. Liu, Y. Zeng, M. Yao, Y. Han, Y. Ma, and C. Gao	Anomalous Structural Transition and Electrical Transport Behaviors in Compressed Zn <sub>2</sub> SnO <sub>4</sub> : Effect of Interface	Sci. Rep. 5, 1441 (2015)
C. Luo, X. Qi, C. Pan, and W. Yang	Diamond synthesis from carbon nano fibers at low temperature and low pressure	Sci. Rep. 5, 13879 (2015)
J. Yan, F. Ke, C. Liu, Q. Wang, J. Zhang, L. Wang, G. Peng, Y. Han, Y. Ma and C. Gao	Electrical transport properties of AlAs under compression: reversible boundary effect	Phys. Chem. Chem. Phys. 17, 26277 (2015)

author	title	
J. Zhang, V. V. Struzhkin, W. Yang, H. K. Mao, H. Lin, Y. Ma, N. Wang and X. J. Chen	Effects of pressure and distortion on superconductivity in $Tl_2Ba_2CaCu_2O_{8+d}$	J. Phys.: Condens. Matter 27, 445701 (2015)
L. Xiao, G. Zhong, Z. Zeng, and X. J. Chen	Theoretical study on structural and electronic properties of solid anthracene under high pressure by density functional theory	Mol. Phys. DOI: 10.1080/00268976.2015.1099753 (2015)
Y. Li, Y. Gao, Y. Han, C. Liu, G. Peng, Q. Wang, F. Ke, Y. Ma, and Chunxiao Gao	EMetallization and Hall-effect of $Mg_2Ge$ under high pressure	Appl. Phys. Lett. 107, 142103 (2015)
E. A. Bell, P. Boehnke, T. M. Harrison, and W. L. Mao	Potentially biogenic carbon preserved in a 4.1 billion-year-old zircon	Proc. Natl. Acad. Sci. USA 112, 14518 - 14521 (2015)
E. A. Zvereva, M. I. Stratan, Y. A. Ovchenkov, V. B. Nalbandyan, J. Y. Lin, E. L. Vavilova, M. F. Iakovleva, M. Abdel-Hafiz, A. V. Silhanek, X. J. Chen, A. Stroppa, S. Picozzi, H. O. Jeschke, R. Valentí, and A. N. Vasiliev	Zigzag antiferromagnetic quantum ground state in monoclinic honeycomblattice antimonates $A_3Ni_2SbO_6$ ( $A = Li, Na$ )	Phys. Rev. B 92, 144401 (2015)
O.-A. Adami, Ž. L. Jelić, C. Xue, M. Abdel-Hafiez, B. Hackens, V. V. Moshchalkov, M. V. Milošević, J. Van de Vondel, and A. V. Silhanek	Onset, evolution, and magnetic braking of vortex lattice instabilities in nanostructuredsuperconducting films	Phys. Rev. B 92, 134506 (2015)
M. Xu , Z. Yu , L. Wang , R. Mazzarello , and M. Wuttig	Reversing the Resistivity Contrast in the Phase-Change Memory Material $GeSb_2Te_4$ Using High Pressure	Adv. Electron. Mater. DOI: 10.1002/aelm.201500240 (2015)
Z. Yu, L. Wang, Q. Hu, J. Zhao, S. Yan, K. Yang, S. Sinogeikin, G. Gu, and H. K. Mao	Structural phase transitionsin $Bi_2Se_3$ under high pressure	Sci. Rep. 5, 15939 (2015)
X. Huang, W. Yang, R. Harder, Y. Sun, M. Lu, Y. S. Chu, I. K. Robinson, and H. K. Mao	Deformation Twinning of a Silver Nanocrystal under High Pressure	Nano Lett. 15, 7644 (2015)
Y. Wang, L. Wu, Y. Lin, Q. Hu, Z. Li, H. Liu, Y. Zhang, H. Gou, Y. Yao, J. Zhang, F. Gao, and H. K. Mao	Structures and stability of novel transition-metal ( $M = Co, Rh, \text{ and } Ir$ ) borides	Phys. Rev. B 92, 174106 (2015)
Z. Yu, W. Wu, Q. Hu, J. Zhao, C. Li, K. Yang, J. Cheng, J. Luo, L. Wang, and H. K. Mao	Anomalous anisotropic compression behavior of superconducting CrAs under high pressure	Proc. Natl. Acad. Sci. USA 112, 14766 )
K. Li, H. Zheng, T. Hattori, A. Sano-Furukawa, C. A. Tulk, J. Molaison, M. Feygenson, I. N. Ivanov, W. Yang, and H. K. Mao	Synthesis, Structure, and Pressure-Induced Polymerization of $Li_3Fe(CN)_6$ Accompanied with Enhanced Conductivity	Inorg. Chem. 54, 11276 - 11282, (2015)
V. Stagno, L. Bindi, C. Park, S. Tkachev, V. B. Prakapenka, H. K. Mao, R. J. Hemley, P. J. Steinhardt, and Y. Fei	Quasicrystals at extreme conditions: The role of pressure in stabilizing icosahedral $Al_{63}Cu_{24}Fe_{13}$ at high temperature	Am. Mineral. 100, 2412 (2015)
L. Wang, F. Ke, Q. Wang, J. Yan, C. Liu, X. Liu, Y. Li, Y. Han, Y. Ma, and C. Gao	Effect of crystallization water on the structural and electrical properties of $CuWO_4$ under high pressure	Appl. Phys. Lett. 107, 201603 (2015)

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Y. Cheng, C. Zhang, T. Wang, G. Zhong, C. Yang, X. J. Chen and H. Lin	Pressure-induced superconductivity in H <sub>2</sub> -containing hydride PbH <sub>4</sub> (H <sub>2</sub> ) <sub>2</sub>	Sci. Rep. 5, 16475 (2015)
L. Xiao, Z. Zeng, and X. J. Chen	Absence of phase transformation of denseanthracene from Raman scattering	High Pressure Res. 35, 379 (2015)
J. Zhu, L. Yang, H.-W. Wang, J. Zhang, W. Yang, X. Hong, C. Jin, and Y. Zhao	Local structural distortion and electrical transport properties of Bi(Ni <sub>1/2</sub> Ti <sub>1/2</sub> )O <sub>3</sub> perovskite under high pressure	Sci. Rep. 5, 18229 (2015)
J. Yang, C. Terakura, M. Medarde, J. S. White, D. Sheptyakov, X. Yan, N. Li, W. Yang, H. Xia, J. Dai, Y. Yin, Y. Jiao, J. Cheng, Y. Bu, Q. Zhang, X. Li, C. Jin, Y. Taguchi, Y. Tokura, and Y. Long	Pressure-induced spin reorientation and spin state transition in SrCoO <sub>3</sub>	Phys. Rev. B 92, 195147 (2015)
S. A. Moore, J. L. Curtis, C. D. Giorgio, E. Lechner, M. Abdel-Hafiez, O. S. Volkova, A. N. Vasiliev, D. A. Chareev, G. Karapetrov, and M. Iavarone	Evolution of the superconducting properties in FeSe <sub>1-x</sub> S <sub>x</sub>	Phys. Rev. B 92, 235113 (2015)
J. Zhao, L. Xu, Y. Liu, Z. Yu, C. Li, Y. Wang, and Z. Liu	Isostructural Phase Transition in Bismuth Oxide Chloride Induced by Redistribution of Charge under High Pressure	J. Phys. Chem. C 119, 27657–27665 (2015)
H. Yamaoka, Y. Yamamoto, E. F. Schwier, F. Honda, Y. Zekko, Y. Ohta, J.-F. Lin, M. Nakatake, H. Iwasawa, M. Arita, K. Shimada, N. Hiraoka, H. Ishii, K.-D. Tsuei, and J. Mizuki	Pressure and temperature dependence of the Ce valence and c-f hybridization gap in CeTIn <sub>5</sub> (T=Co,Rh,Ir) heavy-fermion superconductors	Phys. Rev. B 92, 235110 (2015)
D. Fan, Z. Mao, J. Yang, and J. F. Lin	Determination of the full elastic tensor of single crystals using shear wave velocities by Brillouin spectroscopy	Am. Miner. 10, 2590–2601 (2015)
J. Yang, X. Tong, J. F. Lin, N. Tomioka, T. Okuchi, and V. B. Prakapenka	Elasticity of Ferropericlaase across the Spin Crossover in the Earth's Lower Mantle	Sci. Rep. 5, 17188 (2015)
W. Fan, X. Zhu, F. Ke, Y. Chen, K. Dong, J. Ji, B. Chen, S. Tongay, J. W. Ager, K. Liu, H. Su, and J. Wu	Vibrational spectrum renormalization by enforced coupling across the van der Waals gap between MoS <sub>2</sub> and WS <sub>2</sub> monolayers	Phys. Rev. B 92, 241408(R) (2015)
X. Li, S. Xie, H. Zheng, W. Tian and H. Sun	Boron based two-dimensional crystals: theoretical design, realization proposal and applications	Nanoscale 7, 18863 (2015)
Y. Li, R. Tang, N. Li, H. Li, X. Zhao, P. Zhu, and X. Wang	Pressure-induced amorphization of metavanadate crystals SrV <sub>2</sub> O <sub>6</sub> and BaV <sub>2</sub> O <sub>6</sub>	J. Appl. Phys. 118, 035902 (2015)
C. Fan, X. Jia, B. Yan, N. Chen, Y. Li, L. Chen, L. Guo, and H. Ma	Effects of nitrogen and hydrogen co-doped on {100}-oriented single diamond under high temperature and high pressure	Acta Phys. Sin. 64, 228101 (2015)