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[首 页](#) | [概况简介](#) | [机构设置](#) | [研究队伍](#) | [科研成果](#) | [实验观测](#) | [合作交流](#) | [研究生教育](#) | [学会学报](#) | [党群工作](#) | [创新文化](#) | [科学普及](#)

## 研究队伍

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简历:

张宏福, 1962年9月出生于陕西省山阳县。中国科学院地质与地球物理研究所和西北大学大陆动力学国家重点实验室研究员, 博士生导师。

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1985年 毕业于西北大学地质系, 获本科学士学位。  
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中国矿物岩石地球化学学会化学地球动力学专业委员会委员  
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《科学通报》编委、《Geochemical Journal》编委

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中国东部岩石圈的减薄和破坏过程及其动力学  
华北中、新生代岩石圈地幔的时空演化规律  
华北东、西部岩石圈的差异演化  
橄榄岩-熔体的相互作用  
非传统Li-Fe-Mg同位素地球化学

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社会任职：

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2、国家自然科学基金委重大研究计划《华北克拉通破坏》集成项目“华北克拉通破坏过程及其动力学：岩石地球化学证据”，2011-2014, 750万

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2009年获国家自然科学二等奖（排名第二），获奖题目为“大别山—苏鲁大陆深俯冲及其对华北克拉通的影响”

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代表论著：

138 **Zhang H.F.**, 2012. Destruction of ancient lower crust through magma underplating beneath Jiaodong Peninsula, North China Craton: U-Pb and Hf isotopic evidence from granulite xenoliths. *Gondwana Research* 21, 281-292.

137 **Zhang H.F.**, Ying J.F., Santosh M., Zhao G.C., 2012. Episodic growth of Precambrian lower crust beneath the North China Craton: A synthesis. *Precambrian Research* doi: 10.1016/j.precamres.2011.04.006.

136 **Zhang H.F.**, Sun Y.L., Tang Y.J., Xiao Y., Zhang W.H., Zhao X.M., Santosh M., Menzies M.A., 2012. Melt-peridotite interaction in the Pre-Cambrian mantle beneath the western North China Craton: Petrology, geochemistry and Sr, Nd and Re isotopes. *Lithos* doi: 10.1016/j.lithos.2012.01.027.

135 **Zhang H.F.**, Yang Y.H., Santosh M., Zhao X.M., Ying J.F., Xiao Y., 2012. Evolution of the Archean and Paleoproterozoic lower crust beneath the Trans-North China Orogen and the Western Block of the North China Craton. *Gondwana Research* doi:10.1016/j.gr.2011.08.011.

134 **Zhang H.F.**, Zhu R.X., Santosh M., Ying J.F., Su B.X., Hu Y., 2012. Episodic widespread magma underplating beneath the North China Craton in the Phanerozoic: Implications for craton destruction. *Gondwana Research* doi:10.1016/j.gr.2011.12.006.

133 Tang Y.J., **Zhang H.F.**, Deloule E., Su B.X., Ying J.F., Xiao Y., Hu Y., 2012. Slab-derived lithium isotopic signatures in mantle xenoliths from northeastern North China Craton. *Lithos* doi: 10.1016/j.lithos.2011.12.001.

132 Tang Y.J., **Zhang H.F.**, Ying J.F., Su B.X., Chu Z.Y., Xiao Y., Zhao X.M., 2012. Highly heterogeneous lithospheric mantle beneath the Central Zone of the North China Craton evolved from Archean mantle through diverse melt refertilization. *Gondwana Research* doi:10.1016/j.gr.2012.01.006

131 Tang Y.J., **Zhang H.F.**, Ying J.F., 2012. Secular evolution of lithospheric mantle beneath the central North China Craton: Implication from basaltic rocks and their xenoliths. In: A.I. Al-Juboury (eds.) *Petrology-New Perspectives and Applications* (ISBN 978-953-307-800-7). Intech Open Access Publisher, Rijeka, Croatia. pp. 1-20

130 Su B.X., **Zhang H.F.**, Deloule E., Sakyi P.A., Xiao Y., Tang Y.J., Yan H., Ying J.F., Liu P.P., 2012. Extremely high Li and low  $\delta^7\text{Li}$  signatures in the lithospheric mantle. *Chemical Geology* 292-293, 149-157.

129 Su B.X., **Zhang H.F.**, Yang Y.H., Sakyi P.A., Ying J.F., Tang Y.J., 2012. Breakdown of orthopyroxene contributing to melt pockets in mantle peridotite xenoliths from the Western Qinling, central China: constraints from in situ LA-ICP-MS mineral analyses. *Mineralogy and Petrology* doi 10.1007/s00710-011-0190-6.

128 Su B.X., **Zhang H.F.**, Hu Y., Santosh M., Tang Y.J., Xiao Y., 2012. The genesis of mantle-derived sapphirine. *American Mineralogist* doi: 10.2138/am.2012.3859

127 Zhang P.F., Tang Y.J., Hu Y., **Zhang H.F.**, Su B.X., Xiao Y., Santosh M., 2012. Review of melting experiments on carbonated eclogite and peridotite: insights into mantle metasomatism. *International Geology Review* doi: 10.1080/00206814.2012.663645

126 Zhang Z., **Zhang H.F.**, Shao J.A., Ying J.F., Yang Y.H., Santosh M., 2012. Guangtoushan granites and their enclaves: Implications for Triassic mantle upwelling in the northern margin of the North China Craton. *Lithos* doi:10.1016/j.lithos.2011.11.018.

- 125 Zhao X.M., **Zhang H.F.**, Zhu X.K., Tang S.H., Yan B., 2012. Fe isotope evidence for multistage melt-peridotite interactions in the lithospheric mantle of the eastern China. *Chemical Geology* 292-293, 127-139.
- 124 Zhao X.M., **Zhang H.F.**, Su F., Hu Z.C., Lo C.H., Wang Y., Yang S.H., Guo J.H., 2012. Phlogopite  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology of mantle xenoliths from the North China Craton: Constraints on the eruption ages of Cenozoic basalts. *Gondwana Research* in press.
- 123 Su B.X., **Zhang H.F.**, Sakyi P.A., Yang Y.H., Ying J.F., Tang Y.J., Qin K.Z., Xiao Y., Zhao X.M., Miao Q., Ma Y.G., 2011. The origin of spongy texture in minerals of mantle xenoliths from the Western Qinling, central China. *Contributions to Mineralogy and Petrology* 161, 465-482.
- 122 Su B.X., **Zhang H.F.**, Tang Y.J., Chisonga B., Qin K.Z., Ying J.F., Sakyi P.A., 2011. Geochemical syntheses among the cratonic, off-cratonic and orogenic garnet peridotites and their tectonic implications. *International Journal of Earth Sciences* 100, 695-715.
- 121 Tang Y.J., **Zhang H.F.**, Nakamura E., Ying J.F., 2011. Multistage melt/fluid-peridotite interactions in the refertilized lithospheric mantle beneath the North China Craton: constraints from the Li-Sr-Nd isotopic disequilibrium between minerals of peridotite xenoliths. *Contributions to Mineralogy and Petrology* 161, 845-861.
- 120 Xiao Y., **Zhang H.F.**, 2011. Effects of melt percolation on platinum group elements and Re-Os systematics of peridotites from the Tan-Lu fault zone, eastern North China Craton. *Journal of the Geological Society, London* 168, 1201-1214.
- 119 Xiao Y., **Zhang H.F.**, Shi J.A., Su B.X., Sakyi P. A., Lu X.C., Hu Y., Zhang Z., 2011. Late Paleozoic magmatic record of East Junggar, NW China and its significance: Implication from zircon U-Pb dating and Hf isotope. *Gondwana Research* 20, 532-542.
- 118 Ying J.F., **Zhang H.F.**, Tang Y.J., 2011. Crust-mantle interaction in the central North China Craton during the Mesozoic: Evidence from zircon U-Pb chronology, Hf isotope and geochemistry of syenitic-monzonitic intrusions from Shanxi province. *Lithos* 125, 449-462.
- 117 **Zhang H.F.**, Ying J.F., Tang Y.J., Li X.H., Feng C., Santosh M., 2011. Phanerozoic reactivation of the Archean North China Craton through episodic magmatism: Evidence from zircon U-Pb geochronology and Hf isotopes from the Liaodong Peninsula. *Gondwana Research* 19, 446-459.
- 116 Zhang J., **Zhang H.F.**, Kita N., Shimoda G., Morishita Y., Ying J.F., Tang Y.J., 2011. Secular evolution of the lithospheric mantle beneath the eastern North China craton: evidence from peridotitic xenoliths from Late Cretaceous mafic rocks in the Jiaodong region, east-central China. *International Geology Review* 53(2), 182-211.
- 115 Zhang X.H., Wilde S.A., **Zhang H.F.**, Zhai M.G., 2011. Early Permian high-K calc-alkaline volcanic rocks from NW Inner Mongolia, North China: geochemistry, origin and tectonic implications. *Journal of the Geological Society, London* 168, 525-543.
- 114 Zhang X.H., Mao Q., **Zhang H.F.**, Zhai M.G., Yang Y.H., Hu Z.C., 2011. Mafic and felsic magma interaction during the construction of high-K calc-alkaline plutons within a metacratic passive margin: The Early Permian Guyang batholith from the northern North China Craton. *Lithos* 125, 569-591.
- 113 汤艳杰, 张宏福, 英基丰, 杨蔚, 赵新苗, 苏本勋, 肖燕, 2011. 地幔橄榄岩中橄榄石的指示意义. *地球科学与环境学报* 33(1), 24-33. [Tang Y.J., **Zhang H.F.**, Ying J.F., Yang W., Zhao X.M., Su B.X., Xiao Y., 2011. Indicative significance of olivine in mantle peridotites. *Journal of Earth Sciences and Environment* 33(1), 24-33].
- 112 汤艳杰, 张宏福, 英基丰, 2011. 地幔中EM1端员成因的锂同位素制约. *矿物岩石地球化学通报* 30(1), 11-17. [Tang Y.J., **Zhang H.F.**, Ying J.F., 2011. Sr-Nd-Li isotopic constraints on the origin of EM1 end-member. *Bulletin of Mineralogy, Petrology and Geochemistry* 30 (1), 11-17].
- 111 张舟, 张宏福, 2011. 金刚石与深部碳循环. *地学前缘* 18(3), 268-283. [Zhang Z., **Zhang H.F.**, 2011. Diamond and deep carbon cycle. *Earth Science Frontiers* 18(3), 268-283].
- 110 **Zhang H.F.**, Zhou M.F., Sun M., Zhou X.H., 2010. The origin of Mengyin and Fuxian diamondiferous kimberlites from the North China Craton: Implication for Palaeozoic subducted oceanic slab-mantle interaction. *Journal of Asian Earth Sciences* 37, 425-437.
- 109 **Zhang H.F.**, Nakamura E., Kobayashi K., Ying J.F., Yang Y.J., 2010. Recycled crustal melt injection into lithospheric mantle: implication from cumulative composite and pyroxenite xenoliths. *International Journal of Earth Sciences* 99, 1167-1186.
- 108 **Zhang H.F.**, Deloule E., Tang J.Y., Ying J.F., 2010. Melt/rock interaction in remains of refertilized Archean lithospheric mantle in Jiaodong Peninsula, North China Craton: Li isotopic evidence. *Contributions to Mineralogy and Petrology* 160, 261-277.
- 107 Tang Y.J., **Zhang H.F.**, Ying J.F., 2010. A brief review of isotopically light Li – a feature of the enriched mantle? *International Geology Review* 52(9), 964-976.
- 106 Zhang X.H., **Zhang H.F.**, Jiang N., Wilde S.A., 2010. Contrasting Middle Jurassic and Early Cretaceous mafic intrusive rocks from western Liaoning, North China craton. *Geological Magazine* 147(6), 844-859.

- 105 Zhang X.H., **Zhang H.F.**, Jiang N., Zhai M.G., Zhang Y.B., 2010. Early Devonian alkaline intrusive complex from the northern North China craton: a petrologic monitor of post-collisional tectonics. *Journal of the Geological Society, London* 167, 717-730.
- 104 Zhang X.H., **Zhang H.F.**, Wilde S.A., Yang Y.H., Chen H.H., 2010. Late Permian to early Triassic mafic to felsic intrusive rocks from North Liaoning, North China: Petrogenesis and implication for Phanerozoic continental growth. *Lithos* 117, 283-306.
- 103 Su B.X., **Zhang H.F.**, Sakyi P.A., Ying J.F., Tang Y.J., Yang Y.H., Qin K.Z., Xiao Y., Zhao X.M., 2010. Compositionally stratified lithosphere and carbonatite metasomatism recorded in mantle xenoliths from the Western Qinling (Central China). *Lithos* 116, 111-128.
- 102 Su B.X., **Zhang H.F.**, Sakyi P.A., Qin K.Z., Liu P.P., Ying J.F., Tang Y.J., Malaviarachchi S.P.K., Xiao Y., Zhao X.M., Mao Q., Ma Y.G., 2010. Formation of melt pocket in mantle peridotite xenolith from Western Qinling, Central China: Partial melting and metasomatism. *Journal of Earth Science* 21(5), 641-668.
- 101 Su B.X., **Zhang H.F.**, Sakyi P.A., Qin K.Z., Tang Y.J., Ying J.F., Xiao Y., 2010. Garnet-spinel transition in the upper mantle: Review and interpretation. *Journal of Earth Science* 21(5), 635-640.
- 100 Xiao Y., **Zhang H.F.**, Fan W.M., Ying J.F., Zhang J., Zhao X.M., Su B.X., 2010. Evolution of lithospheric mantle beneath the Tan-Lu fault zone, eastern North China Craton: Evidence from petrology and geochemistry of peridotite xenoliths. *Lithos* 117, 229-246.
- 99 Yang Y.H., **Zhang H.F.**, Chu Z.Y., Xie L.W., Wu F.Y., 2010. Combined chemical separation of Lu, Hf, Rb, Sr, Sm and Nd from a single rock digest and precise and accurate isotope determinations of Lu-Hf, Rb-Sr and Sm-Nd isotope systems using Multi-Collector ICP-MS and TIMS. *International Journal of Mass Spectrometry* 290, 120-126.
- 98 Ying J.F., **Zhang H.F.**, Tang Y.J., 2010. Zoned olivine xenocrysts in a late Mesozoic gabbro from the southern Taihang Mountains: implications for old lithospheric mantle beneath the central North China Craton. *Geological Magazine* 147(2), 161-170.
- 97 Ying J.F., **Zhang H.F.**, Tang Y.J., 2010. Lower crustal xenoliths from Junan, Shandong province and their bearing on the nature of the lower crust beneath the North China Craton. *Lithos* 119, 263-376.
- 96 Zhao X.M., **Zhang H.F.**, Zhu X.K., Tang S.H., Tang Y.J., 2010. Iron isotope variations in spinel peridotite xenoliths from North China Craton: implications for mantle metasomatism. *Contributions to Mineralogy and Petrology* 160, 1-14.
- 95 Zuo H.B., Fan Q.C., **Zhang H.F.**, 2010. Rapid development of the great Millennium eruption of Changbaishan (Tianchi) volcano, China/North Korea: Evidence from U-Th zircon dating. *Lithos* 119, 289-296.
- 94 **Zhang H.F.**, Goldstein S.L., Zhou X.H., Sun M., Cai Y., 2009. Comprehensive refertilization of lithospheric mantle beneath the North China Craton: further Os-Sr-Nd isotopic constraints. *Journal of the Geological Society, London* 166, 249-259.
- 93 Yang W., Teng F.Z., **Zhang H.F.**, 2009. Chondritic magnesium isotopic composition of the terrestrial mantle: A case study of peridotite xenoliths from the North China craton. *Earth and Planetary Science Letters* 288, 475-482.
- 92 Su B.X., **Zhang H.F.**, Ying J.F., Xiao Y., Zhao X.M., 2009. Nature and processes of the lithospheric mantle beneath the western Qinling: evidence from deformed peridotitic xenoliths in Cenozoic kamacite from Haotai, Gansu Province, China. *Journal of Asian Earth Sciences* 34, 258-274.
- 91 Zhang X.H., **Zhang H.F.**, Zhai M.G., Wilde S.A., Xie L.W., 2009. Geochemistry of Middle Triassic gabbros from northern Liaoning, North China: origin and tectonic implications. *Geological Magazine* 146, 540-551.
- 90 Zhang X.H., Wilde S.A., **Zhang H.F.**, Tang Y.J., Zhai M.G., 2009. Geochemistry of hornblende gabbros from Sonidzuqi, Inner Mongolia, North China: implications for magmatism during the final stage of suprasubduction-zone ophiolite formation. *International Geology Review* 51, 345-373.
- 89 **Zhang H.F.**, 2009. Peridotite-melt interaction: a key point for the destruction of cratonic lithospheric mantle. *Chinese Science Bulletin* 54, 3417-3437. [张宏福, 2009. 橄榄岩-熔体相互作用: 克拉通型岩石圈地幔能够被破坏之关键. 科学通报 54(14), 2008-2026].
- 88 张宏福, 路凤香, 赵磊, Menzies M.A., Mattey D.P., 梁尚莹, 2009. 中国原生金刚石的碳同位素组成及其来源. 地球科学 34(1), 37-42. [**Zhang H.F.**, Lu F.X., Zhao L., Menzies M.A., Mattey D.P., Liang S.Y., 2009. Carbon isotopes in China natural diamonds. *Earth Science* 34 (1), 37-42].
- 87 汤艳杰, 张宏福, 英基丰, 2009. 锂同位素分馏机制讨论. 地球科学 34(1), 43-55. [Tang Y.J., **Zhang H.F.**, Ying J.F., 2009. Discussion on fractionation mechanism of lithium isotopes. *Earth Science* 34(1), 43-55].
- 86 朱蓓蓓, 王勤, 王良书, 陈立辉, 张宏福, 2009. 河北阳原新生代玄武岩中橄榄岩捕虏体的含水量研究. 高校地质学报 15(2), 263-272. [Zhu B.B., Wang Q., Wang L.S., Chen L.H., **Zhang H.F.**, 2009. Water content of peridotite xenoliths from Cenozoic basalt in Yangyuan, Hebei Province. *Geological Journal of China Universities* 15(2), 263-272].
- 85 **Zhang H.F.**, Goldstein S.L., Zhou X.H., Sun M., Zheng J.P., Cai Y., 2008. Evolution of subcontinental lithospheric mantle beneath eastern

- 84 Tang Y.J., Zhang H.F., Ying J.F., Zhang J., Liu X.M., 2008. Refertilization of ancient lithospheric mantle beneath the central North China Craton: Evidence from petrology and geochemistry of peridotite xenoliths. *Lithos* 101, 435-452.
- 83 Zhang J., Zhang H.F., Ying J.F., Tang Y.J., Niu L.F., 2008. Contribution of subducted Pacific slab to Late Cretaceous mafic magmatism in Qingdao region, China: A petrological record. *Island Arc* 17, 231-141.
- 82 Zhang X.H., Zhang H.F., Tang Y.J., Wilde S.A., Hu Z.C., 2008. Geochemistry of Permian bimodal volcanic rocks from central Inner Mongolia, North China: Implication for tectonic setting and Phanerozoic continental growth in Central Asian Orogenic Belt. *Chemical Geology* 249, 262-281.
- 81 Zhang X.H., Mao, Q., Zhang H.F., Wilde S.A., 2008. A Jurassic peraluminous leucogranite from Yiwulushan, western Liaoning, North China Craton: Age, origin and tectonic significance. *Geological Magazine* 145(3), 305-320.
- 80 张宏福, 2008. 橄榄岩-熔体相互作用过程中Re-Os体系的变化趋势: 对华北新生代地幔橄榄岩Re-Os年龄含义的启示. *岩石学报* 24(11), 2457-2467. [Zhang H.F., 2008. Variation of Re-Os isotopic system during peridotite-melt interaction: implication for the meaning of Re-Os isotopic age of Cenozoic mantle peridotites from the North China Craton. *Acta Petrologica Sinica* 24(11), 2457-2467].
- 79 张宏福, 邵济安, 2008. 辽西义县组火山岩: 拆沉作用还是岩浆混合作用的产物? *岩石学报* 24(1), 37-48. [Zhang H.F., Shao J.A., 2008. Volcanic lavas of the Yixian Formation in western Liaoning province, China: products of lower crust delamination or magma mixing. *Acta Petrologica Sinica* 24(1), 37-48].
- 78 邵济安, 张宏福, 路凤香, 2008. 辽西壳幔熔体相互作用过程和背景的探讨. *岩石学报* 24(10), 2205-2211. [Shao J.A., Zhang H.F., Lu F.X., 2008. Exploring processes and settings of crust- and mantle-melts interactions in west Liaoning province. *Acta Petrologica Sinica* 24(10), 2205-2211].
- 77 肖燕, 张宏福, 范蔚茗, 2008. 华北晚中生代和新生代玄武岩中单斜辉石巨晶来源及其对寄主岩浆过程的制约: 以营南和鹤壁为例. *岩石学报* 24(1), 65-76. [Xiao Y., Zhang H.F., Fan W.M., 2008. Origin of clinopyroxene megacrysts in the late Mesozoic and Cenozoic basalts from the North China Craton and their constraints on the magma process of host rocks: a case of the Junan and Hebi. *Acta Petrologica Sinica* 24(1), 65-76].
- 76 赵新苗, 朱祥坤, 张宏福, 唐索寒, 2008. Fe同位素在地幔地球化学研究中的应用及进展. *岩石矿物学杂志* 27(5), 435-440. [Zhao X.M., Zhu X.K., Zhang H.F., Tang S.H., 2008. Applications of Fe isotopes to tracing mantle processes. *Acta Petrologica et Mineralogica* 27(5), 435-440].
- 75 Zhang H.F., 2007. Temporal and spatial distribution of Mesozoic mafic magmatism in the North China Craton and implications for secular lithospheric evolution. *Geological Society, London, Special publications* 280, 35-54. In Zhai M.G., Windley B.F., Kusky T.M. and Meng Q.R. (eds) Mesozoic Sub-Continental Lithospheric Thinning Under Eastern Asia.
- 74 Zhang H.F., Ying J.F., Shimoda G., Kita N.T., Morishita Y., Shao J.A., Tang Y.J., 2007. Importance of melt circulation and crust-mantle interaction in the lithospheric evolution beneath the North China Craton: Evidence from Mesozoic basalt-borne clinopyroxene xenocrysts and pyroxenite xenoliths. *Lithos* 96, 67-89.
- 73 Zhang H.F., Nakamura E., Sun M., Kobayashi K., Zhang J., Ying J.F., Tang Y.J., Niu L.F., 2007. Transformation of subcontinental lithospheric mantle through peridotite-melt reaction: Evidence from a highly fertile mantle xenolith from the North China Craton. *International Geology Review* 49, 658-679.
- 72 Tang Y.J., Zhang H.F., Nakamura E., Moriguti T., Kobayashi K., Ying J.F., 2007. Lithium isotopic systematics of peridotite xenoliths from Hannuoba, North China Craton: implications for melt-rock interaction in the considerably thinned lithospheric mantle. *Geochimica et Cosmochimica Acta* 71, 4327-4341.
- 71 Tang Y.J., Zhang H.F., Ying J.F., 2007. Review of the lithium isotope system as a geochemical tracer. *International Geology Review* 49, 374-388.
- 70 Ying J.F., Zhang H.F., Sun M., Tang Y.J., Zhou X.H., Liu X.M., 2007. Petrology and geochemistry of Zijinshan alkaline intrusive complex in Shanxi Province, western North China Craton: implication for magma mixing of different sources in an extensional regime. *Lithos* 98, 45-66.
- 69 Menzies M., Xu Y.G., Zhang H.F., Fan W.M., 2007. Integration of geology, geophysics and geochemistry: A key to understanding the North China Craton. *Lithos* 96, 1-21.
- 68 Zhai M.G., Fan Q.C., Zhang H.F., Sui J.L., Shao J.A., 2007. Lower crustal processes leading to Mesozoic lithospheric thinning beneath eastern North China: Underplating, replacement and delamination. *Lithos* 96, 36-54.
- 67 Zheng J.P., Griffin W.L., O'Reilly S.Y., Yu C.M., Zhang H.F., Pearson N., Zhang M., 2007. Mechanism and timing of lithospheric modification and replacement beneath the eastern North China Craton: Peridotitic xenoliths from the 100 Ma Fuxin basalts and a regional

- 66 路凤香, 张宏福, 陈美华, 郑建平, 尹作为, 任迎新, 赵崇贺, 叶德隆, 2007. 金伯利岩中“熔离小球”的特征及其成因. *现代地质* 21(2), 241-246. [Lu F.X., Zhang H.F., Chen M.H., Zheng J.P., Yin Z.W., Ren Y.X., Zhao C.H., Ye D.L., 2007. Characteristics and their genesis of immiscible small-balls in kimberlites. *Geoscience* 21(2), 241-246].
- 65 Shao J.A., Zhang H.F., Liu X.M., Li Z.T., 2007. Chronological record of the Early Mesozoic underplating in the northern margin of North China—U-Pb chronometry of zircons in the late Mesozoic andesites from western Liaoning. *Progress in Natural Science* 17(8), 943-947. [邵济安, 张宏福, 柳小明, 李之彤, 2007. 华北北缘中生代岩浆底侵作用的年代学记录: 来自辽西晚中生代鞍山岩锆石U-Pb定年结果. *自然科学进展* 17(5), 609-613].
- 64 苏本勋, 张宏福, 王巧云, 孙赫, 肖燕, 英基丰, 2007. 中国东部及西秦岭地区新生代岩石圈地幔中的相转变带及其温压条件. *岩石学报* 23(6), 1313-1320. [Su B.X., Zhang H.F., Wang Q.Y., Sun H., Xiao Y., Ying J.F., 2007. Spinel-garnet phase transition zone of Cenozoic lithospheric mantle beneath the eastern China and western Qinling and its T-P condition. *Acta Petrologica Sinica* 23(6), 1313-1320].
- 63 汤艳杰, 张宏福, 英基丰, 张瑾, 2007. 橄榄岩-熔体反应过程中微量元素和同位素组成的转变. *自然科学进展* 17(6), 748-754. [Tang Y.J., Zhang H.F., Ying J.F., Zhang J., 2007. Changes of trace element and isotopic compositions during peridotite-melt reactions. *Progress in Natural Science* 17(6), 748-754].
- 62 杨岳衡, 张宏福, 谢烈文, 吴福元, 2007. 多接收电感耦合等离子体质谱精确测定钕同位素组成. *分析化学* 35, 71-74. [Yang Y.H., Zhang H.F., Xie L.W., Wu F.Y., 2007. Accurate measurement of neodymium isotopic composition using Neptune Multiple Collector Inductively Coupled Plasma Mass Spectrometry. *Chinese Journal of Analytical Chemistry* 35, 71-74].
- 61 杨岳衡, 张宏福, 刘颖, 谢烈文, 邱昌实, 涂湘林, 2007. 地质样品的一次阴离子色谱法Hf分离及其MC-ICP-MS分析. *岩石学报* 23, 227-232. [Yang Y.H., Zhang H.F., Liu Y., Xie L.W., Qi C.S., Tu X.L., 2007. One column procedure for Hf purification in geological samples using anion exchange chromatography and its isotopic analyses by MC-ICP-MS. *Acta Petrologica Sinica* 23, 227-232].
- 60 张瑾, 张宏福, 2007. 青岛地区晚白垩世基性脉岩中麻粒岩捕虏体的成分特征及其温压条件. *岩石学报* 23, 1133-1140. [Zhang J., Zhang H.F., 2007. Compositional features and P-T conditions of granulite xenoliths from Late Cretaceous mafic dike, Qingdao region. *Acta Petrologica Sinica* 23, 1133-1140].
- 59 张宏福, 杨岳衡, 2007. 华北克拉通东部含金刚石金伯利岩的侵位年龄和Sr-Nd-Hf同位素地球化学特征. *岩石学报* 23(2), 285-294. [Zhang H.F., Yang Y.H., 2007. Emplacement age and Sr-Nd-Hf isotopic characteristics of the diamondiferous kimberlites from the eastern North China Craton. *Acta Petrologica Sinica* 23(2), 285-294].
- 58 张宏福, 汤艳杰, 赵新苗, 杨岳衡, 2007. 非传统同位素体系在地幔地球化学研究中的重要性及其前景. *地学前缘* 14(2), 37-57. [Zhang H.F., Tang Y.J., Zhao X.M., Yang Y.H., 2007. Significance and prospective of non-traditional isotopic systems in mantle geochemistry. *Earth Science Frontiers* 14(2), 37-57].
- 57 赵新苗, 张宏福, 朱祥坤, 张文慧, 杨岳衡, 汤艳杰, 2007. 华北中、新生代岩石圈地幔的交代作用: 含金云母地幔岩提供的证据. *岩石学报* 23(6), 1281-1293. [Zhao X.M., Zhang H.F., Zhu X.K., Zhang W.H., Yang Y.H., Tang Y.J., 2007. Metasomatism of Mesozoic and Cenozoic lithospheric mantle beneath the North China Craton: Evidence from phlogopite-bearing mantle xenoliths. *Acta Petrologica Sinica* 23(6), 1281-1293].
- 56 Zhang H.F., Nakamura E., Zhang J., Akira I., 2006. Glass melt inclusion in clinopyroxene from Linqu Cenozoic basalt, Shandong Province, China. *Chinese Science Bulletin* 51, 1869-1876. [张宏福, Nakamura E., 张瑾, Akira I., 2006. 山东临朐新生代玄武岩携带的单斜辉石晶体中玻璃质熔体包裹体. *科学通报* 51(13), 1558-1564].
- 55 Ying J.F., Zhang H.F., Kita N., Morishita Y., Shimoda G., 2006. Nature and evolution of Late Cretaceous lithospheric mantle beneath the eastern North China Craton: Constraints from petrology and geochemistry of peridotitic xenoliths from Junan, Shandong Province, China. *Earth and Planetary Science Letters* 244, 622-638.
- 54 Ying J.F., Zhou X.H., Zhang H.F., 2006. The geochemical variations of mid-Cretaceous lavas across western Shandong Province, China and their tectonic implications. *International Journal of Earth Sciences* 95, 68-79.
53. Tang Y.J., Zhang H.F., Ying J.F., 2006. Asthenosphere-lithospheric mantle interaction in an extensional regime: Implication from the geochemistry of Cenozoic basalts from Taihang Mountains, North China Craton. *Chemical Geology* 233, 309-327.
- 52 Wang Y.J., Fan W.M., Zhang H.F., Peng T.P., 2006. Early Cretaceous gabbroic rocks from the Taihang Mountains: Implications for a paleosubduction-related lithospheric mantle beneath the central North China Craton. *Lithos* 86, 281-302.
- 51 Su B.X., Zhang H.F., Xiao Y., Zhao X.M., 2006. Characteristics and geological significance of olivine xenocrysts in Cenozoic volcanic rocks from western Qinling. *Progress in Natural Science* 16(12), 1300-1306. [苏本勋, 张宏福, 肖燕, 赵新苗, 2006. 西秦岭宕昌好梯新生代火山岩中橄榄石捕虏晶的特征及其地质意义. *自然科学进展* 16(11) 1428-1435].
- 50 张宏福, 2006. 橄榄岩-熔体的相互作用: 岩石圈地幔组成转变的重要方式. *地学前缘* 13(2), 65-75. [Zhang H.F., 2006. Peridotite-melt interaction: an important mechanism for the compositional transformation of lithospheric mantle. *Earth Science Frontiers* 13(2), 65-75].

- 49 张宏福, 2006. 复杂橄榄岩捕虏体: 反演岩石圈演化过程的罕见而重要的样品. 地球科学31(1), 31-37. [Zhang H.F., 2006. Complex peridotitic xenoliths: rare and important samples for understanding the lithospheric evolution. *Earth Science* 31(1), 31-37].
- 48 张宏福, 英基丰, 汤艳杰, 张瑾, 赵新苗, 牛利锋, 肖燕, 苏本勋, 2006. 华北东部中、新生代岩石圈地幔的不均一性: 来自橄榄石的组成填图结果. 岩石学报 22(9), 2279-2288. [Zhang H.F., Ying J.F., Tang Y.J., Zhang J., Zhao X.M., Niu L.F., Xiao Y., Su B.X., 2006. Heterogeneity of Mesozoic and Cenozoic lithospheric mantle beneath the eastern North China Craton: evidence from olivine compositional mapping. *Acta Petrologica Sinica* 22(9), 2279-2288].
- 47 刘庆, 候泉林, 周新华, 张宏福, 谢烈文, 2006. 阜新中生代火山岩的铂族元素特征—以碱锅和乌拉哈达为例. 岩石矿物学杂志 25(1), 33-39. [Liu Q., Hou Q.L., Zhou X.H., Zhang H.F., Xie L.W., 2006. The distribution of platinum-group elements in Mesozoic volcanic lavas from Fuxin: A case study of Jianguo and Wulahada. *Acta Petrologica et Mineralogica* 25(1), 33-39].
- 46 汤艳杰, 张宏福, 英基丰, 张瑾, 2006. 太行山地区中、新生代玄武质岩浆的源区特征与时空演化. 岩石学报 22 (6), 1657-1664. [Tang Y.J., Zhang H.F., Ying J.F., Zhang J., 2006. Source characteristics and temporal-spatial evolution of Mesozoic and Cenozoic basaltic magmatism in the Taihang Mountains. *Acta Petrologica Sinica* 22 (6), 1657-1664].
- 45 杨岳衡, 张宏福, 谢烈文, 刘颖, 祁昌实, 涂湘林, 2006. 华北克拉通中、新生代典型火山岩的岩石成因: Hf同位素新证据. 岩石学报 22 (6), 1665-1671. [Yang Y.H., Zhang H.F., Xie L.W., Liu Y., Qi C.S., Tu X.L., 2006. Petrogenesis of typical Mesozoic and Cenozoic volcanic rocks from the North China Craton: new evidence from Hf isotopic studies. *Acta Petrologica Sinica* 22(6), 1665-1671].
- 44 杨岳衡, 张宏福, 谢烈文, 吴福元, 2006. 地质样品中镥-铪同位素体系的分离与质谱测试新进展. 岩矿测试 25 (2), 151-158. [Yang Y.H., Zhang H.F., Xie L.W., Wu F.Y., 2006. Progresses in chemical separation and mass spectrometric measurement for Lu-Hf isotopic system in natural geological samples. *Rock and mineral analysis* 25 (2), 151-158].
- 43 张晓晖, 张宏福, 汤艳杰, 刘建明, 2006. 内蒙古中部锡林浩特-西乌旗早三叠世A型酸性火山岩的地球化学特征及其地质意义. 岩石学报 22(11), 2769-2780. [Zhang X.H., Zhang H.F., Tang Y.J., Liu J.M., 2006. Early Triassic A-type felsic volcanism in the Xilinhaote-Xiuqi, central Inner Mongolia: age, geochemistry and tectonic implications. *Acta Petrologica Sinica* 22(11), 2769-2780].
- 42 周新华, 张宏福, 2006. 中生代华北岩石圈地幔高度化学不均一与大陆岩石圈转型. 地球科学 31(1), 8-13. [Zhou X.H., Zhang H.F., 2006. Highly chemical heterogeneity of subcontinental lithosphere mantle beneath North China and its major transformation. *Earth Science* 31 (1), 8-13].
- 41 Zhang H.F., 2005. Transformation of lithospheric mantle through peridotite-melt reaction: a case of Sino-Korean craton. *Earth and Planetary Science Letters* 237, 768-780.
- 40 Zhang H.F., Sun M., Zhou X.H., Ying J.F., 2005. Geochemical constraints on the origin of Mesozoic alkaline intrusive complexes from the North China Craton and tectonic implications. *Lithos* 81, 297-317.
- 39 Wang Y.J., Fan W.M., Peng T.P., Zhang H.F., Guo F., 2005. Nature of the Mesozoic lithospheric mantle and tectonic decoupling beneath the Dabie Orogen, Central China: Evidence from  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology, elemental and Sr-Nd-Pb isotopic compositions of Mesozoic mafic rocks. *Chemical Geology* 220, 165-189.
- 38 张宏福, 周新华, 范蔚茗, 孙敏, 郭锋, 英基丰, 汤艳杰, 张瑾, 牛利锋, 2005. 华北东南部中生代岩石圈地幔性质、组成、富集过程及其形成机理. 岩石学报21(4), 1271-1280. [Zhang H.F., Zhou X.H., Fan W.M., Sun M., Guo F., Ying J.F., Tang Y.J., Zhang J., Niu L.F., 2005. Nature, composition, enrichment processes and its mechanism of the Mesozoic lithospheric mantle beneath the southeastern North China Craton. *Acta Petrologica Sinica* 21(4), 1271-1280].
- 37 张瑾, 张宏福, 英基丰, 汤艳杰, 2005. 华北晚中生代中基性侵入岩中橄榄岩捕虏体是岩石圈地幔直接样品? 岩石学报 21(6), 1559-1568. [Zhang J., Zhang H.F., Ying J.F., Tang Y.J., 2005. Are the peridotitic xenoliths entrained in Late Mesozoic intermediate-mafic intrusive complexes on the North China Craton the direct samples of lithospheric mantle. *Acta Petrologica Sinica* 21(6), 1559-1568].
- 36 Fan Q.C., Zhang H.F., Sui J.L., Zhai M.G., Sun Q., Li N., 2005. Magma underplating and Hannuoba present crust-mantle transitional zone composition: xenolith petrological and geochemical evidence. *Science in China(D)* 48(8), 1089-1105. [樊祺诚, 张宏福, 隋建立, 翟明国, 孙谦, 李霓, 2005. 岩浆底侵作用与汉诺坝现今壳-幔边界组成. *中国科学(D)* 35(1), 1-14].
- 35 牛利锋, 张宏福, 2005. 南太行山地区中基性侵入岩中角闪石的矿物学及其成因. 大地构造与成矿 29 (2), 269-277. [Niu L.F., Zhang H.F., 2005. Mineralogy and petrogenesis of amphiboles from intermediate-mafic intrusions in southern Taihang Mountains. *Geotectonica et Metallogenica* 29 (2), 269-277].
- 34 杨岳衡, 张宏福, 吴福元, 谢烈文, 张艳斌, 2005. Neptune多接收器等离子体质谱精确定测锶同位素组成. 质谱学报 26(4), 215-221. [Yang Y.H., Zhang H.F., Wu F.Y., Xie L.W., Zhang Y.B., 2005. Accurate measurement of strontium isotopic composition by Neptune Multiple Collector Inductively Coupled Plasma Mass Spectrometry. *Journal of Chinese Mass Spectrometry Society* 26(4), 215-221].
- 33 郭锋, 范蔚茗, 王岳军, 李超文, 李晓勇, 张宏福, 2005. 大别-苏鲁地区晚中生代镁铁质岩地球化学对造山带岩石圈地幔性质的约束. 岩石学报 21(4), 1265-1270. [Guo F., Fan W.M., Wang Y.J., Li C.W., Li X.Y., Zhang H.F., 2005. Geochemistry of late Mesozoic mafic rocks from the Dabie-Sulu region, China: constraints on the nature of lithospheric mantle beneath the orogen. *Acta Petrologica Sinica* 21(4), 1265-

- 32 翟明国, 樊祺诚, 张宏福, 隋建立, 2005. 华北东部岩石圈减薄中的下地壳过程: 岩浆底侵、置换与拆沉作用. *岩石学报* 21(6), 1509-1526. [Zhai M.G., Fan Q.C., Zhang H.F., Sui J.L., 2005. Lower crust processes during the lithosphere thinning in eastern China: magma underplating, replacement and delamination. *Acta Petrologica Sinica* 21(6), 1509-1526].
- 31 周新华, 张宏福, 英基丰, 陈立辉, 2005. 大陆深俯冲后效作用的地球化学记录—华北中生代岩石圈地幔源区特征变异的讨论. *岩石学报* 21(4), 1255-1263. [Zhou X.H., Zhang H.F., Ying J.F., Chen L.H., 2005. Geochemical records of subsequent effects of continental deep subduction of mantle source variations of the Mesozoic lithospheric mantle of the North China Craton. *Acta Petrologica Sinica* 21(4), 1255-1263].
- 30 Zhang H.F., Sun M., Zhou M.F., Fan W.M., Zhou X.H., Zhai M.G., 2004. Highly heterogeneous Late Mesozoic lithospheric mantle beneath the North China Craton: evidence from Sr-Nd-Pb isotopic systematics of mafic igneous rocks. *Geological Magazine* 141, 55-62.
- 29 Zhou M.F., Zhang H.F., Robinson P.T., Malpas J., 2004. Comments on "Petrology of the Hegenshan ophiolite and its implication for the tectonic evolution of northern China" by T. Nozaka and Y. Liu [Earth Planet. Sci. Lett. 202 (2002) 89-104]. *Earth and Planetary Science Letters* 217, 207-210.
- 28 Ying J.F., Zhou X.H., Zhang H.F., 2004. Geochemical and isotopic investigation of the Laiwu-Zibo carbonates from western Shandong Province, China, and implications for their petrogenesis and enriched mantle source. *Lithos* 75, 413-426.
- 27 Wang Y.J., Fan W.M., Zhang Y.H., Guo F., Zhang H.F., Peng T.P., 2004. Geochemical,  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronological and Sr-Nd isotopic constraints on the origin of Paleoproterozoic mafic dikes from the southern Taihang Mountains and implications for the ca. 1800 Ma event of the North China Craton. *Precambrian Research* 135, 55-77.
- 26 Zhang H.F., Ying J.F., Xu P., Ma Y.G., 2004. Mantle olivine xenocrysts entrained in Mesozoic basalts from the North China craton: implication for replacement process of lithospheric mantle. *Chinese Science Bulletin* 49 (9), 961-966. [张宏福, 英基丰, 徐平, 马玉光, 2004. 华北中生代玄武岩中地幔橄榄石捕虏晶: 对岩石圈置换过程的启示. *岩石学报* 49 (9), 961-966].
- 25 Liu J.M., Zhang H.F., Sun J.G., Ye J., 2004. Geochemical studies for the C-O and Sr-Nd isotopes of the mantle-derived rocks from Shandong, China. *Science in China(D)* 47(2), 171-180. [刘建明, 张宏福, 孙景贵, 叶杰, 2003. 山东幔源岩浆岩的碳-氧和锶-钕同位素地球化学研究. *中国科学(D)* 33(10), 921-930].
- 24 Zhai M.G., Zhu R.X., Liu J.M., Meng Q.R., Hou Q.L., Hu S.B., Liu W., Zhang H.F., Zhang H.F., 2004. Time range of Mesozoic tectonic regime inversion in eastern North China Block. *Science in China(D)* 47, 151-159. [翟明国, 朱日祥, 刘建明, 孟庆任, 候泉林, 胡圣标, 李忠, 张宏福, 刘伟, 2003. 华北东部中生代构造体制转折的关键时限. *中国科学(D)* 33(10), 913-920].
- 23 汤艳杰, 张宏福, 英基丰, 2004. 太行山中段新生代玄武岩中高镁橄榄石捕虏晶: 残留古老岩石圈地幔样品. *岩石学报* 20(5), 1243-1252. [Tang Y.J., Zhang H.F., Ying J.F., 2004. High-Mg olivine xenocrysts entrained in Cenozoic basalts in central Taihang Mountains: relicts of old lithospheric mantle. *Acta Petrologica Sinica* 20(5), 1243-1252].
- 22 翟明国, 孟庆任, 刘建明, 候泉林, 胡圣标, 李忠, 张宏福, 刘伟, 邵济安, 朱日祥, 2004. 华北东部中生代构造体制转折峰期的主要地质效应和形成动力学探讨. *地学前缘* 11(3), 285-297. [Zhai M.G., Meng Q.R., Liu J.M., Hou Q.L., Hu S.B., Li Z., Zhang H.F., Shao J.A., Zhu R.X., 2004. Geological features of Mesozoic tectonic regime inversion in eastern North China and implication for geodynamics. *Earth Science Frontiers* 11(3), 285-297].
- 21 苗建宇, 周立发, 张宏福, 李剑锋, 2004. 新疆北部中二叠统烃源岩地球化学特征与沉积环境. *地质学报* 4, 534-541. [Miao J.Y., Zhou L.F., Zhang H.F., Li J.F., 2004. The relationship between the geological characteristics and sedimentary environments of the Middle Permian hydrocarbon source rocks. *Acta Geologica Sinica* 4, 534-541].
- 20 Zhang H.F., Sun M., Zhou X.H., Zhou M.F., Fan W.M., Zheng J.P., 2003. Secular evolution of the lithosphere beneath the eastern North China Craton: evidence from Mesozoic basalts and high-Mg andesites. *Geochimica et Cosmochimica Acta* 67(22), 4373-4387.
- 19 Zhang H.F., Menzies M.A., Matthey D., 2003. Mixed mantle provenance: diverse garnet compositions in polymict peridotites, Kaapvaal craton, South Africa. *Earth and Planetary Science Letters* 216, 329-346.
- 18 Zhang H.F., Zheng J.P., 2003. Geochemical characteristics and petrogenesis of Mesozoic basalts from the North China Craton: A case study in Fuxin, Liaoning Province. *Chinese Science Bulletin* 48 (9), 924-930. [张宏福, 郑建平, 2003. 华北中生代玄武岩的地球化学特征与岩石成因: 以辽宁阜新为例. *科学通报* 48(6), 603-609].
- 17 英基丰, 周新华, 张宏福, 2003. 碳酸岩岩浆演化的指示性矿物-环带金云母 $\beta$ 以山东西部雪野碳酸岩为例. *岩石学报* 19(1), 113-119. [Ying J.F., Zhou X.H., Zhang H.F., 2003. Undex mineral: zoned phlogopite for evolution of carbonatitic magma: an example from the Xueye carbonatite in western Shandong. *Acta Petrologica Sinica* 19(1), 113-119].
- 16 Zhang H.F., Sun M., Zhou X.H., Fan W.M., Zhai M.G., Yin J.F., 2002. Mesozoic lithosphere destruction beneath the North China Craton: evidence from major, trace element, and Sr-Nd-Pb isotope studies of Fangcheng basalts. *Contributions to Mineralogy and Petrology* 144, 241-253.

- 15 **Zhang H.F.**, Sun M., 2002. Geochemistry of Mesozoic basalts and mafic dikes in southeastern North China Craton, and tectonic implication. *International Geology Review* 44, 370-382.
- 14 Fan Q.C., Sui J.L., **Zhang H.F.**, Zhai M.G., Xie H.S., 2002. Experimental study on the P wave velocity in rocks from lower crust and crust-mantle transitional zone beneath the Hannuoba. *Progress in Natural Science* 12(12), 925-929. [樊祺诚, 隋建立, 张宏福, 瞿明国, 谢鸿森, 2002. 汉诺坝地区下地壳与壳-幔过渡带岩石波速实验研究. *自然科学进展* 12(10), 1094-1097].
- 13 **Zhang H.F.**, Menzies M.A., Gurney J.J., Zhou X.H., 2001. Cratonic peridotites and silica-rich melts: Diopside-enstatite relationships in polymict xenoliths, Kaapvaal, South Africa. *Geochimica et Cosmochimica Acta* 65, 3365-3377.
- 12 **Zhang H.F.**, Menzies M.A., Matthey D.P., Hinton R.H., Gurney J.J., 2001. Petrology, Mineralogy and geochemistry of oxide minerals in polymict xenoliths from the Bultfontein kimberlites, South Africa: implication for low bulk-rock oxygen isotopic ratios. *Contributions to Mineralogy and Petrology* 141, 367-379.
- 11 **Zhang H.F.**, Sun M., Lu F.X., Zhou X.H., Zhou M.F., Liu Y.S., Zhang G.H., 2001. Geochemical significance of a garnet lherzolite from the Dahongshan kimberlite, Yangtze Craton, southern China. *Geochemical Journal* 35, 315-331.
- 10 **Zhang H.F.**, Matthey D.P., Grassineau N., Lowry D., Brownless M., Gurney J.J., Menzies M.A., 2000. Recent fluid processes in the Kaapvaal Craton, South Africa: coupled oxygen isotope and trace element disequilibrium in polymict peridotites. *Earth and Planetary Science Letters* 176, 57-72.
- 9 Fan W.M., **Zhang H.F.**, Baker J., Jarvis K.E., Mason P.R.D., Menzies M.A., 2000. On and off the North China Craton: Where is the Archaean keel? *Journal of Petrology* 41(7), 933-950.
- 8 **Zhang H.F.**, Menzies M.A., Lu F.X., Zhou X.H., 2000. Major and trace element studies on garnets from Palaeozoic kimberlite-borne mantle xenoliths and megacrysts from the North China craton. *Science in China (D)* 43(4), 423-430. [张宏福, M.A. Menzies, 路凤香, 周新华, 2000. 华北古生代地幔岩捕掳体中石榴石和巨晶石榴石的主、微量元素. *中国科学(D)* 30(2), 128-134].
- 7 **Zhang H.F.**, Menzies M.A., Zhou X.H., Lu F.X., 2000. Textural and chemical zoning in garnets related to mantle metasomatism and deformation processes. *Chinese Science Bulletin* 45(2), 174-180. [张宏福, M.A. Menzies, 周新华, 路凤香, 1999. 石榴石的成份环带与地幔交代及变形作用. *科学通报* 44(22), 2437-2444].
- 6 冯闯, 张宏福, 周新华, 2000. 辽西发现金伯利岩. *地震地质* 22(增刊), 95-98. [Feng C., **Zhang H.F.**, Zhou X.H., 2000. Discovery of kimberlites in west Liaoning, China. *Seismology and Geology* 22(supl), 95-98].
- 5 赵磊, 路凤香, 郑建平, 张宏福, 1995. 金刚石中首次发现自然银和含银铁-金合金包裹体. *科学通报* 40(12), 1114-1115.
- 4 赵磊, 路凤香, 任迎新, 郑建平, 张宏福, 1993. 在金伯利岩中新发现的几种矿物及其意义. *岩石矿物学杂志* 12(3), 284-288. [Zhao L., Lu F.X., Ren Y.X., Zheng J.P., **Zhang H.F.**, 1993. The recent discovery of several minerals in kimberlites of the North China Platform and its significance. *Acta Petrologica et Mineralogica* 12(3), 284-288].
- 3 张宏福, 1993. 辽宁省铁岭地区金伯利岩的地球化学特征及其成因初探. *现代地质* 7(4), 458-464. [**Zhang H.F.**, 1993. Research on geochemical characteristics and petrogenesis of kimberlite in Tieling, Liaoning Province. *Geoscience* 7(4), 458-464].
- 2 张宏福, 1990. 上地幔的氧逸度与金刚石的成因. *地质科技情报* 9(1), 9-15. [**Zhang H.F.**, 1990. Oxygen fugacity of earth's upper mantle and genesis of diamond. *Geological Science and Technology Information* 9(1), 9-15].
- 1 张宏福, 1989. 在金伯利岩中首次发现二硅铁矿和自然硅. *地质科技情报* 8(1), 40.