

LIST OF SELECTED, PEER-REVIEWED PUBLICATIONS

BY HARTWIG E. FRIMMEL

1. Research articles in international peer-reviewed journals

2025

- [161] Mathur, R., Godfrey, L., Frimmel, H.E., Yee, N., Mossman, D., Baran, P., Valencia, V., 2025, Cu isotopic evidence for biologically induced oxidation triggering syngenetic precipitation of gold in Witwatersrand carbon seams. *Geochim. Cosmochim. Acta*, in press.

2024

- [160] Frimmel, H.E., 2024, Die Bedeutung des Südlichen Afrikas als mineralischer Rohstofflieferant. *Jahrbuch Nassauischen Verein f. Naturkunde*, 145, 135-167.
- [159] Hück, M., Basei, M.A.S., Frimmel, H.E., Lino, L.M., Corrêa, V.X., Tesser, L.R., Campos Neto, M.C., Ganade, C.E., 2024, Pan-African granitic magmatism of the Kaoko Belt: tectonic perspective from its South American connection and insights into the crustal architecture of SW Gondwana, *Precambrian Research* 405, 107366.
- [158] Yu, B., Zeng, Q., Frimmel, H.E., Fan, H., Yang, J., Xue, J., Wu, J., Zhou, L., Bao, Z., 2024, Spatio-temporal fluid evolution of gold deposit in the Jiaodong Peninsula, China: A case study of the giant Xiling deposit. *J. Geochem. Expl.* 260, 107455, doi.org/10.1016/j.gexplo.2024.107455.
- [157] Yu, B., Zeng, Q., Frimmel, H.E., Chen, W., Ren, M., Huang, G., Wu, J., Xie, W., Zhou, L., Yang, J., Xue, J., 2024, Genesis of the Shirengou gold deposit, northern North China Craton, based on zircon U–Pb, fluid inclusion, sulfide compositional and S isotope data. *J. Geochem. Expl.* 256, 107358, doi.org/10.1016/j.gexplo.2023.107358.

2023

- [156] Frimmel, H.E., 2023. Linking Archaean climate change with gold metallogeny. *Canadian Journal of Earth Sciences* 60: 1-16, doi 10.1139/cjes-2022-0058.
- [155] Kawohl, A., Frimmel, H.E., Whymark, W., Millonig, L., Gerdes, A., 2023. Evidence of a hitherto unknown ca. 1880 Ma alkaline ultrabasic magmatic event in the Huronian Basin near Sudbury, Ontario. *Canadian Journal of Earth Sciences*, 60, 62-77, doi 10.1139/cjes-2022-0030.
- [154] Ma, Y., Jian, S.-Y., Frimmel, H.E., 2023, Apatite records metamorphic and hydrothermal fluid evolution at the large Shuangqishan orogenic gold deposit, SE China. *GSA Bulletin*, doi.org/10.1130/B36642.1
- [153] Nwaila, G., Zhang, S.E., Bourdeau, J.E., Frimmel, H.E., Ghorbani, Y., 2023, Spatial Interpolation Using Machine Learning – from Patterns and Regularities to Block Models. *Natural Resources Research*, in press, doi:10.1007/s11053-023-10280-7
- [152] Pratihari, A.R., Hegde, V.S., McKenzie, N.R., Frimmel, H.E., Shukla, A.D., Hulaji, S., 2023, Provenance of the conglomerate and siliciclastic rocks from the Gadag greenstone belt, Western Dharwar craton, India: Implications for understanding Neoproterozoic basin margin sedimentation. *Geol. J.* 58: 1-34, doi: 10.1002/gj.4699

2022

- [151] Chakravarti, R., Frimmel, H.E., Singh, S., Barla, A., Venkatesh, A.S., Balakrishnan, S., 2022, A geochemical and mineral chemical assessment of sediment provenance and postdepositional alteration of auriferous conglomerates in the Singhbhum Craton. *J. Geochem. Expl.* 243, 107095, doi.org/10.1016/j.gexplo.2022.107095.
- [150] Decrée, S., Pašava, J., Baele, J.-M., Mercadier, J., Rösel, D., Frimmel, H., 2022, In-situ trace element and Sr isotope signature of apatite: A new key to unravelling the genesis of polymetallic mineralisation in black shales of the Early Cambrian Niutitang Formation, Southern China. *Ore Geol. Rev.*, 150, 105130, doi.org/10.1016/j.oregeorev.2022.105130.
- [149] Frimmel, H.E., Chakravarti, R. and Basei, M.A.S., 2022. Detrital zircon ages from Archaean conglomerates in the Singhbhum Craton, eastern India: Implications on economic Au-U potential. *Mineralium Deposita*, 57, 1499-1514, doi: 10.1007/s00126-022-01121-3.
- [148] Höhn, S, Frimmel, H.E., Will, T., Brodtmann, N., Price, W., 2022. The depositional environment of the Koeris Formation in the Aggeneys-Gamsberg ore district, South Africa. *South African Journal of Geology* 125, in press.
- [147] Ma, Y., Jiang, S.-Y., Frimmel, H., 2022. Metallogenic model of the Fengyan stratabound Zn-Pb deposit in Fujian of southeastern China: Constraints from fluid inclusions, C-O-S-Pb isotopes, and pyrite chemistry. *Ore Geology Reviews* 148, 105045.
- [146] Ma, Y., Jiang, S.-Y., Frimmel, H., Zhu, L., 2022, In-situ chemical and isotopic composition and elemental mapping of multiple-generation pyrite: evidence of episodic gold mobilization and deposition for the Qiucun epithermal gold deposit in Southeast China. *Amer. Mineral.* 107, 1133-1148.
- [145] Ma, Y., Jiang, S.-Y., Frimmel, H.E., 2022, Metallogeny of the Late Jurassic Qiucun epithermal gold deposit in southeastern China: Constraints from geochronology, fluid inclusions, and H-O-C-Pb isotopes. *Ore Geology Reviews* 142, 104688
- [144] Ma, Y., Jiang, S.-Y., Frimmel, H.E., 2022, Deciphering multiple ore-forming processes of the Shuangqishan orogenic gold deposit, Southeast China by *in situ* analysis of pyrite. *Ore Geology Reviews* 142, 104730
- [143] Ma, Y., Jiang, S.-Y., Frimmel, H.E., Zhu, L., Xiong, S.-F., Chen, R.-S., Li, X.-X., 2022, Genesis of the Hebaoshan gold deposit in Fujian Province of Southeast China: constraints from a combined fluid inclusion, H-O-C-S-Pb-He-Ar isotope and geochronological study. *Miner. Deposita* 57, 13-34
- [142] Nwaila, G. T., Frimmel, H. E., Zhang, S. E., Bourdeau, J. E., Tolmay, L. C. K., Durrheim, R. J., Ghorbani, Y., 2022, The minerals industry in the era of digital transition: An energy-efficient and environmentally conscious approach: *Resources Policy*, 78, 102851.
- [141] Pratihari A.R., Hegde, V.S., Frimmel, H.E., Hulaji S., Paltekar, M. 2022. Depositional environment of polymictic conglomerate of the Gadag greenstone Belt, Western Dharwar Craton, south India: An insight for Neoproterozoic marginal sedimentation. *Geol. J.* 57, 1262-1283, DOI: 10.1002/gj.4339
- [140] Shields, G.A., Strachan, R.A., Porter, S.M., Halverson, G.P., Macdonald, F.A., Plumb, K.A., de Alvarenga, C.J., Banerjee, D.M., Bekker, A., Bleeker, W., Brasier, A., Chakraborty, P.P., Collins, A.S., Condie, K., Das, K., Evans, D.A.D., Ernst, R., Fallick, A.E., Frimmel, H., Fuck, R., Hoffman, P.F., Kamber, B.S., Kuznetsov, A.B., Mitchell, R.N., Poire, D.G., Poulton, S.W., Riding, R., Sharma, M., Storey, C., Stueeken, E., Tostevin, R., Turner, E., Xiao, S., Zhang, S., Zhou, Y., Zhu, M., 2022, A template for an improved rock-based subdivision of the pre-Cryogenian time scale. *J. Geol. Soc. London*, 179, 2020-222, doi.org/10.1144/jgs2020-222.
- [139] Yu, B., Zeng, Q., Frimmel, H.E., Yang, J., Zhou, L., Drakou, F., Mcclenaghan, S.H., Wang, Y., Wang, R., 2022, The genesis of Xindian gold deposit, Liaodong Peninsula, NE China: Constraints from zircon U-Pb ages, S-Pb isotopes, and pyrite trace element chemistry. *Resource Geology* 72, e12303, doi.org/10.1111/rge.12303.
- [138] Zhang, S.E., Nwaila, G.T., Frimmel, H.E., Bourdeau J.E., Ghorbani, Y., 2022, Application of machine-learning algorithms to the stratigraphic correlation of Archaean shale units based on litho geochemistry. *J. Geol.* 129, 647-672, doi.org/10.1086/717847.

- [137] Fabricio-Silva, W., Frimmel, H.E., Shutesky, M.E., Rosière, C.A., Massucatto, A.J., 2021, Temperature-controlled ore evolution in orogenic-gold systems related to synchronous granitic magmatism: An example from the Iron Quadrangle Province, Brazil. *Econ. Geol.*, 116, 937-962.
- [136] Hedge, V.S., Corfu, F., Frimmel, H.E., Sawkar, R.H., Korkoppa, M.M., 2021, Neoproterozoic felsic volcanic rocks in tracing evolution of arcs: An insight from geochemical data of the Gadag Schist Belt, Western Dharwar Craton. *J. Geol. Soc. India* 97 (4), 351-362, doi: 10.1007/s12594-021-1693-3
- [135] Höhn, S., Frimmel, H.E., Debaille, V., Price, W., 2021, Pre-Klondikean oxidation prepared the ground for Broken Hill-type mineralization in South Africa. *Terra Nova*, 33, 168-173
- [134] Höhn, S., Frimmel, H.E., Price, W., 2021, Syn-metamorphic sulfidation of the Gamsberg Zn deposit (South Africa). *Mineral. Petrol.*, 115, 709-728.
- [133] Jiang, S.-Y., Ma, Y., Frimmel, H.E., Duan, R.-C., Zhu, L., Chen, R.-S., 2021, Age and fluid source of the sub-volcanic Zhaiping Ag-Pb-Zn deposit in the eastern Cathaysia Block (Fujian Province, Southeastern China). *Miner. Deposita* 57, 439-454.
- [132] Ma, Y., Jiang, S.-Y., Frimmel, H.E., Xiong, S.-F., Zhu, L., Chen, R.-S., 2021, Early Paleozoic orogenic gold deposit in the Cathaysia Block, China: A first example from the Shuangqishan Deposit. *Gondwana Res.* 91, 231-253.
- [131] Nwaila, G., Ghorbani, Y., Zhang, S.E., Tolmay, L.C.K., Rose, D.H., Nwaila, P.C., Bourdeau, J.E., Frimmel, H.E., 2021, Valorisation of mine waste - Part II: Resource evaluation for consolidated and mineralised mine waste using the Central African Copperbelt as an example. *Journal of Environmental Management* 299, 113553.
- [130] Nwaila, G., Ghorbani, Y., Zhang, S.E., Frimmel, H.E., Tolmay, L.C.K., Rose, D.H., Nwaila, P.C., Bourdeau, J.E., 2021, Valorisation of mine waste - Part I: Characteristics of, and sampling methodology for consolidated mineralised tailings by using Witwatersrand gold mines (South Africa) as example. *J. Environmental Management* 295, 113013.
- [129] Nwaila, G.T., Bourdeau, J.E., Bybee, G.B., Frimmel, H.E., Jinnah, Z., Zhang, S.E., Manzi, M.S.D., Minter, W.E.L., Mashaba, D., 2021, The significance of erosion channels on gold metallogeny in the Witwatersrand (South Africa): Evidence from the Carbon Leader Reef in the Carletonville goldfield. *Econ. Geol.* 116, 265-284.
- [128] Nwaila, G.T., Zhang, S.E., Tolmay, L.C.K., Frimmel, H.E., 2021. Algorithmic optimization of an underground Witwatersrand-type gold mine plan. *Natural Resources Research* 30, 1175-1197, doi 10.1007/s11053-020-09772-7
- [127] Yu, B., Zeng, Q., Frimmel, H.E., Zhou, L., McClenaghan, S.H., Drakou, F., Wang, Y., Chen, P., Yu, C., 2021, A magmatic-hydrothermal origin of the Xinfang gold deposit, Liaodong Peninsula, China, revealed by in-situ S-Pb isotopes and trace element analyses of pyrite. *Resource Geology*, 71, 144-160.
- [126] Zhang, S.E., Nwaila, G.T., Tolmay, L., Frimmel, H.E., Bourdeau, J.E., 2021, Integration of machine learning algorithms with Gompertz curves and Kriging to estimate resources in gold deposits. *Natural Resources Research*, 30, 39-56.

2020

- [125] Decrée, S., Savolainen, M., Mercadier, J., Debaille, V., Höhn, S., Frimmel, H.E., Baele, J.-M., 2020, Geochemical and spectroscopic investigation of apatite in the Siilinjärvi Carbonatite Complex: keys to understanding apatite forming processes and assessing potential for rare earth elements. *Appl. Geochem.* 123, 104778.
- [124] Decrée, S., Cawthorn, G., Deloule, E., Mercadier, J., Frimmel, H.E., Baele, J.-M., 2020, Unravelling the processes controlling apatite formation in the Phalaborwa Complex (South Africa) based on combined cathodoluminescence, LA-ICPMS and in-situ O and Sr isotope analyses. *Contr. Mineral. Petrol.*, 175, doi 10.1007/s00410-020-1671-6
- [123] Kawohl, A., Whymark, W., Bite, A., Frimmel, H.E., 2020, High-grade magmatic PGE-Cu(-Ni) sulfide mineralization associated with the Rathbun Offset Dike of the Sudbury Igneous Complex (Ontario, Canada). *Econ. Geol.*, 115, 505-525.

- [122] Nwaila, G.T., Ghorbani, Y., Becker, M., Frimmel, H.E., Peterson, J., Zhang, S.E., 2020, Geometallurgical approach for implications of ore blending on cyanide leaching and adsorption behaviour of the Witwatersrand gold ores, South Africa. *Natural Resources Research* 29, 1007-1030, doi.org/10.1007/s11053-019-09522-4.
- [121] Nwaila, G.T., Zhang, S.E., Frimmel, H.E., Manzi, M.S., Dohm, C., Durrheim, R.J., Burnett, M. and Tolmay, L., 2020. Local and target exploration of conglomerate-hosted gold deposits using machine learning algorithms: A case study of the Witwatersrand gold ores, South Africa. *Natural Resources Research*, 29, pp.135-159.
- [120] Will, T., Höhn, S., Frimmel, H.E., Gaucher, C., le Roux, P.J., Macey, P.H., 2020, Petrological, geochemical and isotopic data of Neoproterozoic rock units from Uruguay and South Africa: Correlation of basement terranes across the South Atlantic. *Gondwana Research* 80, 12-32.
- [119] Yu, B., Zeng, Q., Frimmel, H.E., Qiu, H., Li, Q., Yang, J.-H., Wang, Y., Zhou, L., Chen, P., Li, J., 2020, The 127 Ma gold mineralization in the Wulong deposit, Liaodong Peninsula, China: Constraints from molybdenite Re–Os, monazite U–Th–Pb, and zircon U–Pb geochronology. *Ore Geol. Rev.*, 121, in press, doi 10.1016/j.oregeorev.2020.103542

2019

- [118] Kawohl, A., Frimmel, H.E., Bite, A., Whymark, W., Debaille, V., 2019. Very distant Sudbury impact dykes revealed by drilling the Temagami geophysical anomaly. *Precamb. Res.* 324, 220-235.
- [117] Nwaila, G.T., Frimmel, H.E., 2019, Highly siderophile element concentrations in Archaean and Palaeoproterozoic marine shales of the Kaapvaal Craton, South Africa. *Mineral. Petrol.*, 113, 307-327.
- [116] Will, T., Gaucher, C., Li, Q., Ling, X.-X., Li, X.-H., Frimmel, H., 2019, Neoproterozoic magmatic and metamorphic events in the Cuchilla Dionisio Terrane, Uruguay, and possible correlations across the South Atlantic. *Precamb. Res.* 320, 303-322.

2017-2018

- [115] Frimmel, H.E., 2018, Episodic concentration of gold to ore grade through Earth's history. *Earth Sci. Rev.*, 180, 148-158.
- [114] Höhn, S., Koglin, N., Klopff, L., Schüssler, U., Tragelehn, H., Frimmel, H.E., Zeh, A., Brätz, H., 2018, Geochronology, stratigraphy and geochemistry of Cambro-Ordovician, Silurian and Devonian volcanic rocks of the Saxothuringian Zone in NE Bavaria (Germany)—new constraints for Gondwana break up and ocean–island magmatism. *Int. J. Earth Sci.* 107, 359-377.
- [113] Prakash, D., Yadav, R., Tewari, S., Frimmel, H.E., Koglin, N., Sachan, H., Yadav M., 2018, Geochronology and phase equilibria modeling of ultra-high temperature sapphirine+quartz-bearing granulite at Usilampatti, Madurai block, southern India. *Geological Journal* 53, 139-158.
- [112] Whymark, W.E., Frimmel, H.E., 2018, Regional gold-enrichment of conglomerates in Paleoproterozoic supergroups formed during the 2.45 Ga rifting of Kenorland. *Ore Geol. Rev.* 101, 985-996.
- [111] Will, T., Frimmel, H.E., 2018, Where does a continent prefer to break up? Lessons from the South Atlantic margins. *Gondwana Res.* 53, 9-19.
- [110] Yu, B., Zeng, Q., Frimmel, H.E., Wang, Y., Guo, W., Sun, G., Zhou, T., Li, J., 2018, Genesis of the Wulong gold deposit, northeastern North China Craton: Constraints from fluid inclusions, H–O–S–Pb isotopes, and pyrite trace element concentrations. *Ore Geol. Rev.* 102, 313-337.
- [109] Dourgham, I.A., & Fawzy, K.M., Frimmel, H.E., 2017, Ore minerals and geochemical characterization of the Dungash gold deposit, South Eastern Desert, Egypt. *Arab. J. Geosci.* 10, 145, 17 p., DOI 10.1007/s12517-017-2891-6.

- [108] Höhn, S., Frimmel, H.E., Debaille, V., Pašava, J., Debouge, W., 2017, Synorogenic Cu-Zn deposit formation at Kupferberg (Bavaria, Germany) evidenced by pyrite chemistry and copper and sulfur isotopes. *Mineral. Deposita* 52, 1145-1156.
- [107] Nwaila, G., Frimmel, H.E., Minter, W.E.L., 2017, Provenance and geochemical variations in shales of the Mesoarchean Witwatersrand Supergroup. *J. Geol.*, 125, 399-422.
- [106] Prakash, D., Chandra Singh, P., Tewari, S., Joshi, M., Frimmel, H.E., M., Hokada, T., Rakotonandrasana, T., 2017, Petrology, pseudosection modelling and U-Pb geochronology of silica-deficient Mg-Al granulites from the Jagtiyal section of Karimnagar granulite terrane, northeastern Dharwar Craton, India. *Precamb. Res.* 299, 177-194.

2015-2016

- [105] Kawohl, A., Frimmel, H.E., 2016, Isoferroplatinum-pyrrhotite-troilite intergrowth as evidence of desulfurization in the Merensky Reef at Rustenburg (western Bushveld Complex, South Africa). *Mineral. Magazine*, 80, 1041-1053.
- [104] Will, T., Frimmel, H.E., Pfänder, J., 2016, Möwe Bay dykes, northwestern Namibia: Geochemical and geochronological evidence for different mantle source regions during the Cretaceous opening of the South Atlantic. *Chem. Geol.*, 444, 141-157.
- [103] Frimmel, H.E., Hennigh, Q., 2015, First whiffs of atmospheric oxygen triggered onset of crustal gold cycle. *Mineral. Deposita*, 50, 5-23.
- [102] Grosch, E.G., Frimmel, H.E., Abu-Alam, T., Košler J., 2015, Metamorphic and age constraints on crustal reworking in the western HU Sverdrupfjella: implications for the evolution of western Dronning Maud Land, Antarctica. *J. Geol. Soc. London*, 172, 499-518.
- [101] Prakash, D., Deepak, Chandra Singh, P., Singh, C.K., Arima, M., Frimmel, H.E., 2015, Reaction textures and metamorphic evolution of sapphirine–spinel-bearing and associated granulites from Diguva Sonaba, Eastern Ghats Mobile Belt, India. *Geol. Mag.*, 152, 316-340.
- [100] Spiegel, T., Paeth, H., Frimmel, H.E., 2015, Evaluating key parameters for the initiation of a Neoproterozoic Snowball Earth with a single Earth System Model of intermediate complexity. *Earth Planet. Sci. Lett.*, 415, 100-110.
- [99] Will, T.M., Lee, S.-H., Schmädicke, E., Frimmel, H.E., Okrusch, M., 2015, Variscan terrane boundaries in the Odenwald-Spessart basement, Mid-German Crystalline Zone: New evidence from ocean ridge, intraplate and arc-derived metabasaltic rocks. *Lithos*, 220-223, 23-42.

2013 -2014

- [98] Donadel, A.K., Hofer-Oellinger, G., Frimmel, H.E., Schrott, L., 2014, Geological evolution of post-glacial river mouths – Saalach and Königsseeache (Austria). *Austrian J. Earth Sci.*, 107, 60-73.
- [97] Frimmel, H. E., 2014, A giant Mesoarchean crustal gold-enrichment episode: Possible causes and consequences for exploration: Society of Economic Geologists, Special Publication, 18, 209-234.
- [96] Frimmel, H.E., Schedel, S., Brätz, H., 2014, Uraninite chemistry as forensic tool for provenance analysis. *Appl. Geochem.*, 48, 104-121.
- [95] Höhn, S., Frimmel, H.E., Pasava, J., 2014, The rare earth element potential of kaolin deposits in the Bohemian Massif (Czech Republic, Austria). *Mineral. Deposita*, 49, 967-986.
- [94] Will, T., Frimmel, H.E., Gaucher, C., Bossi, J., 2014, Geochemical and isotope evidence for initiation of Cretaceous South Atlantic opening along a former Neoproterozoic back-arc basin — Implications for the location of the main Pan-African suture in south west Gondwana. *Lithos* 202-203, 363-381.

- [93] Depiné, M., Frimmel, H.E., Emsbo, P., Koenig, A.E., Kern, M., 2013, Trace element distribution in uraninite from Mesoarchaeon Witwatersrand conglomerates (South Africa) supports placer model and magmatogenic source. *Mineralium Deposita* 48, 423-435.
- [92] Frimmel, H.E., Depiné, M., Emsbo, P., Koenig, A.E., Kern, M., 2013, Reply to comments by T. Oberthür on “Trace element distribution in uraninite from Mesoarchaeon Witwatersrand conglomerates (South Africa) supports placer model and magmatogenic source”. *Mineralium Deposita* 48, 1051-1053.
- [91] Frimmel, H.E., Basei, M.A.S., Correa, V.X., Mbangula, N., 2013, A new lithostratigraphic subdivision and geodynamic model for the Pan-African western Saldania Belt, South Africa. *Precambrian Research* 231, 218-235.
- [90] Kounov, A., Viola, G., Dunkl, I., Frimmel, H.E., 2013, Southern African perspectives on the long-term morpho-tectonic evolution of cratonic interiors. *Tectonophysics*, 601, 177-191.
- [89] Mosoh Bambi, C. K., Frimmel, H. E., Zeh, A., and Suh, C. E., 2013, Age and origin of Pan-African granites and associated U-Mo mineralization at Ekomédion, southwestern Cameroon: *Journal of African Earth Sciences*, 88, 15-37.
- [88] Pašava, J., Frimmel, H.E., Vymazalová, A., Dobeš, P., Jukov, A.V., Koneev, R.I., 2013, A two-stage evolution model for the Amantaytau orogenic-type gold deposit in Uzbekistan. *Mineralium Deposita* 48, 825-840.
- [87] Will, T., Frimmel, H.E., 2013, The influence of inherited structures on dyke emplacement during Gondwana break-up in southwestern Africa. *J. Geol.*, 121, 455-474.

2011 – 2012

- [86] Mosoh Bambi, C.K., Suh, C.E., Nzenti, J.P., Frimmel, H.E., 2012, U-Mo mineralization potential in Pan-African granites, southwestern Cameroon: Economic geology of the Ekomédion prospect. *Journal of African Earth Sciences* 65, 25-45.
- [85] Zhao, H.-X., Jiang, S.-Y., Frimmel, H.E., Dai, B.-Z., Ma, L., 2012, Geochemistry, geochronology and Sr–Nd–Hf isotopes of two Mesozoic granitoids in the Xiaoqinling gold district: Implication for large-scale lithospheric thinning in the North China Craton. *Chemical Geology*, 294/295, 173-189.
- [84] Frimmel, H.E., Basei, M.S., Gaucher, C., 2011, Neoproterozoic geodynamic evolution of SW-Gondwana: a southern African perspective. *International Journal of Earth Sciences*, 100, 323-354.
- [83] Frimmel, H.E., Müller, J., 2011, Estimates of mineral resource availability – How reliable are they? *Akad. Geowiss. Geotechn., Veröffentl.*, 28, 39-62.
- [82] Koglin, N., Frimmel, H.E., Minter, W.E.L., Brätz, H., 2011, Reply to Reimer and Mossman. Comment on “Trace-element characteristics of different pyrite types in Mesoarchaeon to Palaeoproterozoic placer deposits” by Koglin et al. (*Mineralium Deposita* 45, 259-280, 2010). *Mineralium Deposita* 46, 839-840.
- [81] Müller, J., Frimmel, H.E., 2011, Abscissa-transforming second order polynomial functions to approximate the unknown historic production of non-renewable resources. *Mathematical Geosciences*, 43, 625-634.
- [80] Zhao, H.-X., Frimmel, H.E., Jiang, S.-Y., Dai, B.-Z., 2011, LA-ICP-MS trace element analysis of pyrite from the Xiaoqinling gold district, China: Implications for ore genesis. *Ore Geology Reviews* 43, 142-153.
- [79] Zhao, H.-X., Jiang, S.-Y., Frimmel, H.E., 2011, A rare Bi-Pb tellurosulfide, $PbBi_4Te_4S_3$, from the Wenyu gold deposit in the Xiaoqinling gold province, China. *Canadian Mineralogist* 49, 1297-1304.

2009 - 2010

- [78] Frimmel, H.E., 2010, On the reliability of stable carbon isotopes for Neoproterozoic chemostratigraphic correlation. *Precambrian Research*, 182, 239-253.
- [77] Koglin, N., Zeh, A., Frimmel, H.E., Gerdes, A., 2010, New constraints on the auriferous Witwatersrand sediment provenance from combined detrital zircon U-Pb and Lu-Hf

- isotope data for the Eldorado Reef (Central Rand Group, South Africa). *Precambrian Research*, 183, 817-824.
- [76] Koglin, N., Frimmel, H.E., Minter, W.E.L., Brätz, H., 2010, Trace-element characteristics of different pyrite types in Mesoarchaeon to Palaeoproterozoic placer deposits. *Mineralium Deposita* 45, 259-280.
- [75] Müller, J., Frimmel, H.E., 2010, Numerical analysis of historic gold production cycles and implications for future sub-cycles. *The Open Geology Journal* 4, 35-40.
- [74] Pašava J, Frimmel HE, Taiyi L, Koubová M, Martínek K (2010) Extreme PGE concentrations in lower Cambrian acid tuff layer from the Kunyang phosphate deposit, Yunnan Province, South China – possible PGE source for lower Cambrian Mo-Ni-polyelement ore beds. *Economic Geology*, 105, 1047-1056.
- [73] Will, T.M., Frimmel, H.E., Zeh, A., Le Roux, P., Schmädicke, E., 2010, Tectonic and crustal evolution of the Shackleton Range, East Antarctica: geochemical and isotope constraints. *Precambrian Research* 180, 85-112.
- [72] Will T.M., Schmädicke E., Frimmel H.E., 2010, Deep solid-state equilibration and deep melting of abyssal peridotite from the slow-spreading Mid-Atlantic Ridge at the Kane Transform area (MARK), 23°N, ODP leg 153. *Mineralogy and Petrology*, 100, 185-200.
- [71] Zeh, A., Gerdes, A., Will, T.M., Frimmel, H.E., 2010, Hafnium isotope homogenisation in metasedimentary rocks under amphibolite-facies conditions (<650°C): examples from the Shackleton Range (Antarctica). *Geochimica et Cosmochimica Acta*, 74, 4740-4758.
- [70] Frimmel, H.E., 2009, Trace element distribution in Neoproterozoic carbonates as palaeoenvironmental indicator, *Chemical Geology* 258, 338-353.
- [69] Frimmel, H.E., Zeh, A., Lehrmann, B., Hallbauer, D.K., Frank, W., 2009, Geochemical and geochronological constraints on the nature of the immediate basement beneath the Mesoarchaeon auriferous Witwatersrand Basin, South Africa. *Journal of Petrology*, 50, 2187-2220.
- [68] Jiang, S.-Y., Pi, D.-H., Heubeck, C., Frimmel, H.E., Liu, Y.-P., Deng, H.-L., Ling, H.-F., Yang, J.-H., Zhu, M., 2009, Early Cambrian ocean anoxia in South China, *Nature*, 459, E5-E6.
- [67] Will, T.M., Zeh, A., Gerdes, A., Frimmel, H.E., Millar, I.L., Schmädicke, E., 2009, Palaeoproterozoic to Palaeozoic magmatic and metamorphic events in the Shackleton Range, East Antarctica: Constraints from zircon and monazite dating, and implications for the amalgamation of Gondwana. *Precambrian Research*, 172, 25-45.

2007 -2008

- [66] Basei, M. A. S., Frimmel, H. E., Nutman, A. P., Preciozzi, F., 2008, West Gondwana amalgamation based on detrital zircon ages from Neoproterozoic Ribeira and Dom Feliciano belts of South America and comparison with coeval sequences from SW Africa, in Pankhurst, R. J., Trouw, R. A. J., De Brito Neves, B. B., and de Wit, M. J. (eds.), *West Gondwana: Pre-Cenozoic Correlations Across the South Atlantic Region*, Geol. Soc. London, Spec. Publ. No. 294, p. 239-256.
- [65] Bisnath, A., McCourt, S., Frimmel, H.E., Buthelezi, S.B., 2008, The metamorphic evolution of the Tugela Terrane, Natal Belt, South Africa. *South Afr. J. Geol.* 111, 369-386.
- [64] Frimmel, H. E., 2008, Earth's continental crustal gold endowment: *Earth Planet. Sci. Letters*, 267, 45-55.
- [63] Frimmel, H. E., 2008, An evaporitic facies in Neoproterozoic post-glacial carbonates: the Gifberg Group, South Africa: *Gondwana Research* 13, p. 453-468.
- [62] Frimmel, H. E., Groves, D. I., Kirk, J., Ruiz, J., Chesley, J., and Minter, W. E. L., 2007, Reply to Comments by Thomas O. Reimer on "The Formation and Preservation of the Witwatersrand Goldfields, the World's Largest Gold Province". *SEG Newsletter*, No. 68, p. 31.
- [61] Grosch, E. G., Bisnath, A., Frimmel, H. E., and Board, W. S., 2007, Geochemistry and tectonic setting of mafic rocks in Western Dronning Maud Land, East Antarctica:

Implications for the geodynamic evolution of the Proterozoic Maud Belt: *Journal of the Geological Society, London*, v. 164, p. 465-475.

2005 - 2006

- [60] Bisnath, A., Frimmel, H. E., Armstrong, R. A., and Board, W. S., 2006, Tectono-thermal evolution of the Maud Belt: New SHRIMP U-Pb zircon data from Gjelsvikfjella, Dronning Maud Land, East Antarctica. *Precambrian Research*, v. 150, p. 95-121.
- [59] Frimmel, H. E., Tack, L., Basei, M. S., and Nutman, A. P., 2006, Provenance and chemostratigraphy of the Neoproterozoic West Congolian Group in the Democratic Republic of Congo: *Journal of African Earth Sciences*, v. 46, p. 221-239.
- [58] Jacob, J., Ward, J.D., Bluck, B.J., Scholz, R.A., and Frimmel, H.E., 2006, Some observations on diamondiferous bedrock gully trapsites on Late Cainozoic, marine-cut platforms of the Sperrgebiet, Namibia: *Ore Geology Reviews*, v. 28, p. 493-506.
- [57] Alchin, D. J., Frimmel, H. E., and Jacobs, L. E., 2005, Stratigraphic setting of the metalliferous Rosh Pinah Formation and the Spitzkop and Koivib Suites in the Pan-African Gariep Belt, southwestern Namibia: *South African Journal of Geology*, v. 108, p. 19-34.
- [56] Basei, M. A. S., Frimmel, H. E., Nutman, A. P., Preciozzi, F., and Jacob, J., 2005, A connection between the Neoproterozoic Dom Feliciano (Brazil/Uruguay) and Gariep (Namibia/South Africa) orogenic belts - evidence from a reconnaissance provenance study: *Precambrian Research*, v. 139, p. 195-221.
- [55] Bisnath, A., and Frimmel, H. E., 2005, Metamorphic evolution of the Maud Belt: P-T-t path for high-grade gneisses in Gjelsvikfjella, Dronning Maud Land, East Antarctica. *Journal of African Earth Sciences*, v. 43, p. 505-524.
- [54] Board, W. S., Frimmel, H. E., and Armstrong, R. A., 2005, Pan-African tectonism in the western Maud Belt: P-T-t path for high-grade gneisses in the H.U. Sverdrupfjella, East Antarctica: *Journal of Petrology*, v. 46, p. 671-699.
- [53] Frimmel, H.E., 2005, Archaean atmospheric evolution: Evidence from the Witwatersrand gold fields, South Africa: *Earth Science Reviews*, v. 70, p. 1-46.
- [52] Frimmel, H.E., 2005, The case for a modified paleoplacer model for Witwatersrand gold: *SEG Newsletter*, No. 60, p. 7-14.
- [51] Frimmel, H. E., and Lane, K., 2005, Geochemistry of carbonate beds in the Neoproterozoic Rosh Pinah Formation, Namibia: Implications on depositional setting and hydrothermal ore formation: *South African Journal of Geology*, v. 108, p. 5-18.
- [50] Gaucher, C., Frimmel, H.E., and Germs, G.J.B., 2005, Organic-walled microfossils and biostratigraphy of the upper Port Nolloth Group (Namibia): implications for the latest Neoproterozoic glaciations: *Geological Magazine*, v. 142, p. 539-559.

2003 - 2004

- [49] Frimmel, H. E., Jonasson, I., and Mubita, P., 2004, An Eburnean base metal source for sediment-hosted zinc-lead deposits in Neoproterozoic units of Namibia: Lead isotopic and geochemical evidence: *Mineralium Deposita*, v. 39, p. 328-343.
- [48] Frimmel, H. E., and Fölling, P. G., 2004, Late Vendian closure of the Adamastor Ocean: Timing of tectonic inversion and syn-orogenic sedimentation in the Gariep Basin: *Gondwana Research*, v. 7, p. 685-699.
- [47] Raith, J. G., Cornell, D. H., Frimmel, H. E., and de Beer, C. H., 2003, New insights into the geology of the Namaqua Tectonic Province, South Africa, from ion probe dating of detrital and metamorphic zircon: *The Journal of Geology*, v. 111, p. 347-366.

2001 - 2002

- [46] Frimmel, H. E., 2002, Genesis of the world's largest gold deposits: *Science*, v. 297, p. 1815-1817.

- [45] Frimmel, H. E., Fölling, P. G., and Eriksson, P., 2002, Neoproterozoic tectonic and climatic evolution recorded in the Gariep Belt, Namibia and South Africa: *Basin Research*, v. 14, p. 55-67.
- [44] Fölling, P. G., and Frimmel, H. E., 2002, Chemostratigraphic correlation of carbonate successions in the Gariep and Saldania Belts, Namibia and South Africa: *Basin Research*, v. 14, p. 69-88.
- [43] Frimmel, H. E., Fölling, P. G., and Diamond, R., 2001, Metamorphism of the Permo-Triassic Cape Fold Belt and its basement, South Africa: *Mineralogy and Petrology*, v. 73, p. 325-346.
- [42] Frimmel, H. E., and Jiang, S.-Y., 2001, Marine evaporites from an oceanic island in the Neoproterozoic Adamastor ocean: *Precambrian Research*, v. 105, p. 57-71.
- [41] Frimmel, H. E., Zartman, R. E., and Späth, A., 2001, Dating Neoproterozoic continental break-up in the Richtersveld Igneous Complex, South Africa: *The Journal of Geology*, v. 109, p. 493-508.
- [40] Spangenberg, J., and Frimmel, H. E., 2001, Basin-internal derivation of hydrocarbons in the Witwatersrand Basin, South Africa: evidence from bulk and molecular $\delta^{13}\text{C}$ data: *Chemical Geology*, v. 173, p. 339-355.

1999 - 2000

- [39] Chetty, D., and Frimmel, H. E., 2000, The role of evaporites in the genesis of base metal sulphide mineralisation in the Northern Platform of the Pan-African Damara Belt, Namibia: *Geochemical and fluid inclusion evidence from carbonate wall rock alteration: Mineralium Deposita*, v. 35, p. 364-376.
- [38] Fölling, P. G., Zartman, R. E., and Frimmel, H. E., 2000, A novel approach to double-spike Pb-Pb dating of carbonate rocks: examples from Neoproterozoic sequences in southern Africa: *Chemical Geology*, v. 171, p. 97-122.
- [37] Frimmel, H. E., 2000, New U-Pb zircon ages for the Kuboos pluton in the Pan-African Gariep belt, South Africa: Cambrian mantle plume or far field collision effect?: *South African Journal of Geology*, v. 103, p. 207-214.
- [36] Frimmel, H. E., 2000, The stratigraphy of the Chameis Sub-terrane in the Gariep Belt in southwestern Namibia: *Communications of the geological survey of Namibia*, v. 12, p. 179-186.
- [35] Frimmel, H. E., 2000, The Pan-African Gariep Belt in southwestern Namibia and western South Africa: *Communications of the Geological Survey of Namibia*, v. 12, p. 197-209.
- [34] Frimmel, H. E., and Board, W. S., 2000, Fluid evolution in and around the Rosh Pinah massive sulphide deposit in the external Pan-African Gariep Belt, Namibia: *South African Journal of Geology*, v. 103, p. 191-206.
- [33] Kleinschmidt, G., Helfereich, S., Henjes-Kunst, F., Jackson, C., and Frimmel, H. E., 2000, The pre-Permo-Carboniferous rocks and structures from southern Kirwanveggen, Dronning Maud Land, Antarctica. *Polarforschung*, v. 66, p. 7-18.
- [32] Frimmel, H. E., Hallbauer, D. K., and Gartz, V. H., 1999, Gold mobilizing fluids in the Witwatersrand Basin: composition and possible sources: *Mineralogy and Petrology*, v. 66, p. 55-81.
- [31] Gartz, V. H., and Frimmel, H. E., 1999, Complex Metasomatism of an Archean Placer in the Witwatersrand Basin, South Africa: The Ventersdorp Contact Reef - Hydrothermal Aquifer?: *Economic Geology*, v. 94, p. 689-706.
- [30] Guggenheim, S., and Frimmel, H. E., 1999, Ferrokinochitalite, a new brittle mica species: Structural and mineralogical characterization: *Canadian Mineralogist*, v. 37, p. 1445-1452.
- [29] Zartman, R. E., and Frimmel, H. E., 1999, Radon-generated ^{206}Pb in hydrothermal sulphide minerals and bitumen from the Ventersdorp Contact Reef, South Africa: *Mineralogy and Petrology*, v. 66, p. 171-191.

1997-1998

- [28] Frimmel, H. E., 1998, Detrital origin of hydrothermal Witwatersrand gold - a review (Frimmel, 1997) - Discussion and reply. *Terra Nova*, v. 10, p. 347-350.
- [27] Frimmel, H. E., and Frank, W., 1998, Neoproterozoic tectono-thermal evolution of the Gariep Belt and its basement, Namibia/South Africa: *Precambrian Research*, v. 90, p. 1-28.
- [26] Frimmel, H. E., 1997, Detrital origin of hydrothermal Witwatersrand gold-a review: *Terra Nova*, v. 9, p. 192-197.
- [25] Frimmel, H. E., 1997, Chlorite thermometry in the Witwatersrand basin: Constraints on the Paleoproterozoic geotherm in the Kaapvaal Craton, South Africa: *Journal of Geology*, v. 105, p. 601-615.
- [24] Frimmel, H. E., and Gartz, V. H., 1997, Witwatersrand gold particle chemistry matches model of metamorphosed, hydrothermally altered placer deposits: *Mineralium Deposita*, v. 32, p. 523-530.

1995-1996

- [23] Frimmel, H. E., 1996, Witwatersrand iron formations and their significance to gold genesis and the composition limits of orthoamphibole: *Mineralogy and Petrology*, v. 56, p. 273-295.
- [22] Frimmel, H. E., Hartnady, C. J. H., and Koller, F., 1996, Geochemistry and tectonic setting of magmatic units in the Pan-African Gariep Belt, Namibia: *Chemical Geology*, v. 130, p. 101-121.
- [21] Frimmel, H. E., Klötzli, U., and Siegfried, P., 1996, New Pb-Pb single zircon age constraints on the timing of Neoproterozoic glaciation and continental break-up in Namibia: *The Journal of Geology*, v. 104, p. 459-469.
- [20] Frimmel, H. E., 1995, Metamorphic evolution of the Gariep Belt: *South African Journal of Geology*, v. 98, p. 176-190.
- [19] Frimmel, H. E., Hoffmann, D., Watkins, R. T., and Moore, J. M., 1995, An Fe analogue of kinoshitalite from the Broken Hill massive sulfide deposit in the Namaqualand Metamorphic Complex, South Africa: *American Mineralogist*, v. 80, p. 833-840.
- [18] Frimmel, H. E., and van Achterbergh, E., 1995, Metamorphism of calc-silicate and associated rocks in the Pan-African Kaaimans Group, Saldania Belt, South Africa: *Mineralogy and Petrology*, v. 53, p. 75-102.
- [17] Nowicki, T. E., Frimmel, H. E., and Waters, D. J., 1995, The occurrence of osumilite in pelitic granulites of the Namaqualand Metamorphic Complex, South Africa. - *South African Journal of Geology*, v. 98, p. 191-201.
- [16] Laube, N., Frimmel, H. E., and Hoernes, S., 1995, Oxygen and carbon isotopic study on the genesis of the Steirischer Erzberg siderite deposit (Austria). *Mineralium Deposita*, v. 30, p. 285-293.

1986-1994

- [15] Frimmel, H. E., 1994, Metamorphism of Witwatersrand gold: *Exploration and Mining Geology*, v. 3, p. 357-370.
- [14] Frimmel, H. E., le Roex, A. P., Knight, J., and Minter, W. E. L., 1994, A case study of the postdepositional alteration of the Witwatersrand Basal Reef gold placer - A reply. *Economic Geology*, v. 89, p. 255-257.
- [13] Frimmel, H. E., Le Roex, A. P., Knight, J., and Minter, W. E. L., 1993, A case study of the postdepositional alteration of the Witwatersrand Basal reef gold placer: *Economic Geology*, v. 88, p. 249-265.
- [12] Minter, W. E. L., Goedhart, M. L., Knight, J., and Frimmel, H. E., 1993, Morphology of Witwatersrand gold grains from the Basal Reef: Evidence for their detrital origin: *Economic Geology*, v. 88, p. 237-248.
- [11] Frimmel, H. E., 1992, Isotopic fronts in hydrothermally mineralized carbonate rocks: *Mineralium Deposita*, v. 27, p. 257-267.

- [10] Frimmel, H. E., and Hartnady, C. J. H., 1992, Blue amphiboles and their significance for the metamorphic history of the Pan-African Gariiep belt, Namibia.: *Journal of metamorphic Geology*, v. 10, p. 651-669.
- [9] Grum, W, Frimmel, H. E., and Koller, F., 1992, Sr-Isotopenuntersuchung zur Genese der Antimonit-Lagerstätte Schlaining (Penninikum, Burgenland). *Mitteilungen der Gesellschaft der Geologie- und Bergbaustudenten Österreichs*, v. 38, p. 73-92.
- [8] Frimmel, H. E., 1991, Isotopic constraints on fluid/rock ratios in carbonate rocks: barite-sulfide mineralization in the Schwaz Dolomite, Tyrol (Eastern Alps, Austria): *Chemical Geology*, v. 90, p. 195-209.
- [7] Frimmel, H. E., and Niedermayr, G., 1991, Sr isotopes in magnesites from Permian and Triassic sediments of the Eastern Alps: *Applied Geochemistry*, v. 6, p. 89-96.
- [6] Frimmel, H. E., 1989, Einsatzmöglichkeiten der Sr-Methode in der Lagerstättengeologie am Beispiel der Baryt-Lagerstätte Kogel/Brixlegg (Tirol). *Archiv für Lagerstättenforschung. Geologische Bundesanstalt*, v. 11, p. 127-146.
- [5] Frimmel, H. E., and Papesch, W., 1989, Sr, O, and C isotope study of the Brixlegg barite deposit, Tyrol (Austria): *Economic Geology*, v. 85, p. 64-73.
- [4] Frimmel, H. E., 1988, Metagranitoide am Westrand der Gurktaler Decke (Oberostalpin) - Genese und paläotektonische Implikationen. *Jahrbuch der Geologischen Bundesanstalt*, v.131, p. 575-592.
- [3] Frimmel, H. E., 1988, Strontium isotopic evidence for the origin of siderite, ankerite and magnesite mineralizations in the Eastern Alps: *Mineralium Deposita*, v. 23, p. 268-275.
- [2] Frimmel, H. E., 1986, Petrographie, Gefügemerkmale und geochronologische Daten von Kristallingeröllen aus dem Oberkarbon der Gurktaler Decke im Vergleich zum benachbarten Altkristallin. *Mitteilungen der Gesellschaft der Geologie- und Bergbaustudenten Österreichs*, v. 32, p. 39-65.
- [1] Frimmel, H. E., 1986, Isotopengeologische Hinweise für die paläogeographische Nachbarschaft von Gurktaler Decke (Oberostalpin) und dem Altkristallin östlich der Hohen Tauern (Österreich). *Schweizer mineralogisch petrographische. Mitteilungen*, v. 66, p. 193 -208.

2. Chapters in books (peer-reviewed)

2020

- [27] Frimmel, H.E., James, C.S., 2021, Placer Deposits. In *Encyclopedia of Geology*, 2nd ed., Elsevier, Amsterdam, 877-898.
- [26] Frimmel, H.E., Nwaila, G.T., 2020, Geologic evidence of syngenetic gold in the Witwatersrand Goldfields, South Africa. In Sillitoe, R.H., Goldfarb, R.J., Robert, F., Simmons, S.F. (eds.) *Geology of the World's Major Gold Deposits and Provinces*, Soc. Econ. Geol., Littleton, Special Publ., 23, 645-668.

2018-2019

- [25] Frimmel, H.E., 2019, The Witwatersrand Basin and its gold deposits. In Kröner, A., Hofmann, A. (eds.) *The Archaean Geology of the Kaapvaal Craton, Southern Africa*, Springer Nature, Cham, *Regional Geology Rev.*, 255-275.
- [24] Basei, M.S.A., Frimmel, H.E., Campos Neto, M.C., Ganade de Araujo, C.E., de Castro, N.A., Passarelli, C.R., 2018, The tectonic history of the Southern Adamastor Ocean based on a correlation of the Kaoko and Dom Feliciano belts. In Siegesmund, S., Basei, M.A.S., Oyhantcabal, P., Oriolo, S. (eds), *Geology of Southwest Gondwana. Regional Geology Reviews*, Springer International Publishing, Heidelberg, 63-88.

- [23] Frimmel, H.E., 2018, The Gariiep Belt. In Siegesmund, S., Basei, M.A.S., Oyhantcabal, P., Oriolo, S. (eds), *Geology of Southwest Gondwana. Regional Geology Reviews*, Springer International Publishing, Heidelberg, 353-386.

2010 – 2011

- [22] Frimmel, H.E., 2011, The Karoetjes Kop and Bloupoort Formations, Gifberg Group, South Africa. In Arnaud, E., Halverson, G. P. & Shields-Zhou, G. (eds), *The Geological Record of Neoproterozoic Glaciations*. Geological Society, London, *Memoirs*, 36, 233–237.
- [21] Frimmel, H.E., 2011, The Kaigas and Numees Formations, Port Nolloth Group, in South Africa and Namibia. In Arnaud, E., Halverson, G. P. & Shields-Zhou, G. (eds), *The Geological Record of Neoproterozoic Glaciations*. Geological Society, London, *Memoirs*, 36, 223–231.
- [20] Frimmel, H.E., 2011, The Chameis Gate Member, Chameis Group, Marmora Terrane, Namibia. In Arnaud, E., Halverson, G. P. & Shields-Zhou, G. (eds), *The Geological Record of Neoproterozoic Glaciations*. Geological Society, London, *Memoirs*, 36, 217–221.

2008 - 2009

- [19] Frimmel, H.E., 2009, Configuration of Pan-African orogenic belts in southwestern Africa. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 145-151.
- [18] Frimmel, H.E., Miller, R.McG., 2009, Continental Rifting. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 153-159.
- [17] Frimmel, H.E., Miller, R.McG., 2009, Mineral deposits. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 227-229.
- [16] Gaucher, C., Frimmel, H.E., Germs, G.J.B., 2009, Tectonic events and palaeogeographic evolution of Southwestern Gondwana in the Neoproterozoic and Cambrian. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 295-318.
- [15] Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E., 2009, The Neoproterozoic and Cambrian: A time of upheavals, extremes, and innovations. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 3-11.
- [14] Germs, G.J.B., Miller, R.McG., Frimmel, H.E., Gaucher, C., 2009, Syn- to late orogenic sedimentary basins of southwestern Africa. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), *Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology*, Elsevier, Amsterdam, v. 16, p. 183-203.
- [13] Miller, R.McG., Frimmel, H.E., 2009, Syn- to post-orogenic magmatism. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson,

- G.P., Frimmel, H.E. (eds.), Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology, Elsevier, Amsterdam, v.16, p. 219-226.
- [12] Miller, R.McG., Frimmel, H.E., Halverson, G.P., 2009, Passive continental margin evolution. Neoproterozoic to Early Palaeozoic evolution of southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology, Elsevier, Amsterdam, v. 16, p. 161-181.
- [11] Miller, R.McG., Frimmel, H.E., Will, T.M., 2009, Geodynamic synthesis of the Damara Orogen sensu lato. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology, Elsevier, Amsterdam, v. 16, p. 231-235.
- [10] Kaufman, A.J., Sial, A.N., Frimmel, H.E., Misi, A., 2009, Neoproterozoic to Cambrian palaeoclimatic events in southwestern Gondwana. In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology, Elsevier, Amsterdam, v. 16, p. 369-388.
- [9] Will, T.M., Miller, R.McG., Frimmel, H.E., 2009, Orogenic tectono-thermal evolution. Neoproterozoic to Early Palaeozoic evolution of Southwestern Africa: In Gaucher, C., Sial, A.N., Halverson, G.P., Frimmel, H.E. (eds.), Neoproterozoic-Cambrian Tectonics, Global Change and Evolution: a Focus on Southwestern Gondwana, Developments in Precambrian Geology, Elsevier, Amsterdam, v. 16, p. 205-218.
- [8] Frimmel, H.E., 2008, Neoproterozoic Gariep Orogen. *In*: Miller, R. McG. (ed.) The Geology of Namibia, Geol. Surv. Namibia. Windhoek, v. 2, p. 14-1 – 14-39.

1996 - 2006

- [7] Gresse, P. G., von Veh, M. W., and Frimmel, H. E., 2006, Namibian (Neoproterozoic) to Early Cambrian successions, in Johnson, M. R., Anhaeusser, C. R., and Thomas, R. J. (eds.), The Geology of South Africa, Geological Society of South Africa/Council for Geoscience, Pretoria, p. 395-420, ISBN 978-1-919908-77-9.
- [6] Frimmel, H. E., Groves, D. I., Kirk, J., Ruiz, J., Chesley, J., and Minter, W. E. L., 2005, The formation and preservation of the Witwatersrand goldfields, the largest gold province in the world, in Hedenquist, J.W., Thompson, J.F.H., Goldfarb, R.J., and Richards, J.P. (eds.), One Hundredth Anniversary Volume, Society of Economic Geologists, p. 769-797, ISBN 978-1-887483-01-8.
- [5] Frimmel, H. E., 2004, Neoproterozoic sedimentation rates and timing of glaciations – a southern African perspective, in Eriksson, P. G., Altermann, W., Nelson, D. R., Mueller, W. U., and Catuneanu, O., eds., The Precambrian Earth: Tempos and Events, Developments in Precambrian Geology v. 12, Amsterdam, Elsevier, p. 459-473, ISBN 0-444-51506-2.
- [4] Frimmel, H. E., 2004, Formation of a late Mesoproterozoic supercontinent: The South Africa - East Antarctica connection, in Eriksson, P. G., Altermann, W., Nelson, D. R., Mueller, W. U., and Catuneanu, O., eds., The Precambrian Earth: Tempos and Events, Developments in Precambrian Geology v.12, Amsterdam, Elsevier, p. 240-255, ISBN 0-444-51506-2.
- [3] Frimmel, H. E., and Minter, W. E. L., 2002, Recent developments concerning the geological history and genesis of the Witwatersrand gold deposits, South Africa, in Goldfarb, R. J., and Nielsen, R. L., eds., Integrated Methods for Discovery: Global Exploration in the Twenty-First Century, Society of Economic Geologists Special Publication: Littleton, Society of Economic Geologists v.9, p. 17-45, ISBN1-887483-91-8.
- [2] Frimmel, H. E., and Minter, W. E. L., 2002, An overview of geological processes that controlled the distribution of gold in the Witwatersrand deposits, in Cooke, D. R., and

Pongratz, J., eds., Giant Ore Deposits: Characteristics, genesis and exploration, CODES Special Publication, 4, University of Tasmania, p. 221-241, ISBN 1-86295-040-7.

- [1] Frimmel, H. E., Deane, J. G., and Chadwick, P. J., 1996, Pan-African tectonism and the genesis of base metal sulfide deposits in the northern foreland of the Damara Orogen, Namibia, in Sangster, D. F., ed., Carbonate-hosted lead-zinc deposits, Littleton, Society of Economic Geologists No. 4, p. 204-217, ISBN 1-887483-95-0.

3. Peer-reviewed conference proceedings

2023

- [43] Garayp, E., Frimmel, H.E., 2023. The conglomerate-hosted Jacobina gold deposits, a modified paleoplacer of the Witwatersrand-type in Brazil. Proceedings of the 17th SGA Biennial Meeting, ETH Zurich, 28 August – 1 September 2023, vol. 2, 134-137.
- [42] Höhn, S., Frimmel, H.E., Schneider, M., Brodtmann, N., Price, W., 2023. Mineralogy and geochemistry of the Koeris Formation – Evidence of post-depositional base metal mobility within the Aggeneys-Gamsberg ore district, South Africa. Proceedings of the 17th SGA Biennial Meeting, ETH Zurich, 28 August – 1 September 2023, vol. 2, 303-306.

2022

- [41] Frimmel, H.E., 2022. Gold potential of Archaean conglomerates in the Singhbhum Craton, eastern India. In: Christie, A.B. (ed.) Proceedings of the 16th SGA Biennial Meeting, 28-31 March 2022, v. 1, p. 101-104.
- [40] Höhn, S., Frimmel, H.E. and Price, W., 2022. Reinterpreting the genesis of the giant Gamsberg Zn deposit (South Africa): the role of pre-Klondikean supergene alteration. In: Christie, A.B. (ed.) Proceedings of the 16th SGA Biennial Meeting, 28-31 March 2022, v. 1, p. 133-136
- [39] Wasitschek, L. and Frimmel, H.E., 2022. A hitherto unclassified volcanic unit in the Gariep Belt and its significance on exploration for Rosh Pinah-type SEDEX deposits. In: Christie, A.B. (ed.) Proceedings of the 16th SGA Biennial Meeting, 28-31 March 2022, v. 1, 412-415.

2019

- [38] Camenzuli, F., Frimmel, H.E., Wooldridge, A., 2019, Regional-scale mapping of mineral potential for porphyry Cu-Au deposits in southeastern Europe. Proceed. 15th SGA Biennial Meeting, 27-30 August 2019, Glasgow, vol. 3, p. 1101-1104.
- [37] Frimmel, H.E., Hegde, V.S., Minter, W.E.L., Harris, C., 2019, Au- and U-bearing conglomerates in the Bababudan Group, Dharwar Craton, India. Proceed. 15th SGA Biennial Meeting, 27-30 August 2019, Glasgow, vol. 2, p. 772-775.
- [36] Höhn, S., Frimmel, H.E., Debaille, V., 2019, Pre-metamorphic oxidation of the Broken Hill deposit at Aggeneys (South Africa) revealed by Cu isotopes. Proceed. 15th SGA Biennial Meeting, 27-30 August 2019, Glasgow, vol. 3, p. 1212-1215.
- [35] Kawohl, A., Frimmel, H.E., Whymark, W., Bite, A., 2019, Rathbun Lake revisited: a magmatic-hydrothermal Pd-Pt-Cu occurrence possibly related to the Sudbury impact. Proceed. 15th SGA Biennial Meeting, 27-30 August 2019, Glasgow, vol. 2, p. 605-608.
- [34] Nwaila, G.T., Zhang, S.E., Frimmel, H.E., 2019, Automated facies classification and gold grade prediction using machine learning algorithms. Proceed. 15th SGA Biennial Meeting, 27-30 August 2019, Glasgow, vol. 3, p. 1136-1139.

2017

- [33] Frimmel, H.E., 2017, Gold through time and space. In Mercier-Langevin, P., Dube, B., Bardoux, M., Ross, P.-S., Dion, C. (eds.), Mineral Resources to Discover, Proc. 14th SGA

- Biennial Meeting, 20-23 August 2017, Quebec City, Society for Geology Applied to Mineral Deposits, vol. 1, 3-6.
- [32] Höhn, S., Frimmel, H.E., Debaille, V., Pasava, J., Kuulmann, L., Debouge, W., 2017, Metamorphogenic base metal mineralization at the margin of a nappe complex: the example of Kupferberg, Germany. In In Mercier-Langevin, P., Dube, B., Bardoux, M., Ross, P.-S., Dion, C. (eds.), Mineral Resources to Discover, Proc. 14th SGA Biennial Meeting, 20-23 August 2017, Quebec City, Society for Geology Applied to Mineral Deposits, vol. 2, 605-608.
- [31] Kawohl, A., Frimmel, H.E., Bite, A., Whymark, W., 2017, What's Inside the Temagami geophysical anomaly, Sudbury District, Ontario? In In Mercier-Langevin, P., Dube, B., Bardoux, M., Ross, P.-S., Dion, C. (eds.), Mineral Resources to Discover, Proc. 14th SGA Biennial Meeting, 20-23 August 2017, Quebec City, Society for Geology Applied to Mineral Deposits, vol. 4, 1543-1546.
- [30] Nwaila, G., Frimmel, H.E., 2017, Geochemistry of marine shales in the West Rand and Central Rand groups of the Mesoarchaeon Witwatersrand Basin: implications for sedimentary gold endowment. In Mercier-Langevin, P., Dube, B., Bardoux, M., Ross, P.-S., Dion, C. (eds.), Mineral Resources to Discover, Proc. 14th SGA Biennial Meeting, 20-23 August 2017, Quebec City, Society for Geology Applied to Mineral Deposits, vol. 1, 75-78.

2014 – 2015

- [29] Frimmel, H.E., 2015, Onset of crustal gold cycle triggered by first oxygenic photosynthesis. In André-Mayer, A.-S., Cathelineau, M., Muchez, P., Pirard, E., Sindern, S. (eds.) Mineral Resources in a Sustainable World, Proc. 13th Biennial SGA Meeting, 24-27 August 2015, Nancy, Université de Lorraine, v. 1, 25-28.
- [28] Höhn, S., Frimmel, H.E., Koglin, N., 2015, Multi-stage sulfidation at Bavaria's largest Cu-Zn deposit (Kupferberg/Germany). In André-Mayer, A.-S., Cathelineau, M., Muchez, P., Pirard, E., Sindern, S. (eds.) Mineral Resources in a Sustainable World, Proc. 13th Biennial SGA Meeting, 24-27 August 2015, Nancy, Université de Lorraine, v. 5, 1917-1920.
- [27] Hölzing, A., Frimmel, H.E., Voland, V., Dremel, K., Zabler, S., Minter, W.E.L., 2015, The cover of Mineralium Deposita's anniversary volume uncovered. In André-Mayer, A.-S., Cathelineau, M., Muchez, P., Pirard, E., Sindern, S. (eds.) Mineral Resources in a Sustainable World, Proc. 13th Biennial SGA Meeting, 24-27 August 2015, Nancy, Université de Lorraine, v.4, 1407-1410.
- [26] Nwaila, T.G., Frimmel, H.E., Minter, W.E.L., Beukes, N., 2015, Provenance and geochemical variations in shales of the Mesoarchaeon Witwatersrand Supergroup. In André-Mayer, A.-S., Cathelineau, M., Muchez, P., Pirard, E., Sindern, S. (eds.) Mineral Resources in a Sustainable World, Proc. 13th Biennial SGA Meeting, 24-27 August 2015, Nancy, Université de Lorraine, v. 1, 169-172.

2012 – 2013

- [25] Frimmel, H.E., Schedel, S., Depiné, M., Kern, M., Brätz, H., 2013, Uraninite chemistry as provenance tool. In Jonsson E. et al. (eds.) Mineral deposit research for a high-tech world. Proc. 12th Biennial SGA Meeting, 12-15 August 2013, Uppsala, Geological Survey of Sweden, p. 1592-1593.
- [24] Lohmeyer, M., Frimmel, H.E., 2013, Generation of a GIS-based mineral potential map of the Neoproterozoic Gariep Belt in Namibia. In Jonsson E. et al. (eds.) Mineral deposit research for a high-tech world. Proc. 12th Biennial SGA Meeting, 12-15 August 2013, Uppsala, Geological Survey of Sweden, p. 480-483.
- [23] Pašava, J., Vymazalová, A., Dobeš, P., Frimmel, H., Jukov, A.V., Koneev, R.I., 2013, The importance of black shales in the origin of the Amantaytau orogenic gold deposit in Uzbekistan: evidence from pyrite chemistry and sulfur isotope data. In Jonsson E. et al.

(eds.) Mineral deposit research for a high-tech world. Proc. 12th Biennial SGA Meeting, 12-15 August 2013, Uppsala, Geological Survey of Sweden, p. 1174-1177.

2010 – 2011

- [22] Frimmel, H.E., Müller, J., 2011, Medium-term uranium supply and demand economics. In Barra, F., Reich, M., Campos, E. Tornos, F. (eds.) Let's Talk Ore Deposits. Proc. 11th Biennial SGA Meeting, 26-29 September 2011, Antofagasta, Ediciones Universidad Católica del Norte, p. 938-940.
- [21] Koglin, N., Gomes, A.A.S. Jr., Cabral, A.R., Frimmel, H.E., Minter, W.E.L., 2011, Constraints on the auriferous Moeda Formation metaconglomerate, Minas Gerais, Brazil: whole-rock geochemistry and mineral chemistry of tourmaline. . In Barra, F., Reich, M., Campos, E. Tornos, F. (eds.) Let's Talk Ore Deposits. Proc. 11th Biennial SGA Meeting, 26-29 September 2011, Antofagasta, Ediciones Universidad Católica del Norte, p. 876-878.

2007 – 2009

- [20] Frimmel, H., Emsbo, P., Koenig, A.E, 2009, The source of Witwatersrand Gold: Evidence from uraninite chemistry. In Williams, P.J. et al (eds.) Smart Science for Exploration and Mining. Proc. 10th Biennial SGA Meeting, 17-20 August 2009, Townsville, v.1, p. 353-355.
- [19] Koglin, N., Frimmel, H., Minter, W.E.L., Brätz, H., 2009, Trace element characteristics of different pyrite types from Mesoarchean to Palaeoproterozoic placer deposits. In Williams, P.J. et al. (eds.) Smart Science for Exploration and Mining. Proc. 10th Biennial SGA Meeting, 17-20 August 2009, Townsville, v. 1, p. 363-365.
- [18] Frimmel, H.E., 2007, Gold Endowment of the Earth's Crust Over Time. Andrew, C. et al. (eds.), Digging Deeper, Proc. 9th Biennial SGA Meeting, 20-23 August 2007, Irish Assoc. Econ. Geol., Dublin, v. 1, p. 11-14.
- [17] Frimmel, H.E., Spangenberg, J.E, 2007, Molecular and compound-specific isotopic composition of hydrocarbons in Lower Cambrian black shales from the Yangtze Platform, South China. Andrew, C. et al. (eds.), Digging Deeper, Proc. 9th Biennial SGA Meeting, 20-23 August 2007, Irish Assoc. Econ. Geol., Dublin, v. 1, p. 801-804.
- [16] Lehrmann, B., Frimmel, H.E., 2007, Mesoarchean Basement of the Witwatersrand: A Possible Source of the Gold? Andrew, C. et al. (eds.), Digging Deeper, Proc. 9th Biennial SGA Meeting, 20-23 August 2007, Irish Assoc. Econ. Geol., Dublin, v. 1, p. 15-18.
- [15] Yang, X.-Y., Ling, M.-X., Frimmel, H.E., 2007, Geochemistry of Sandstone-Type Uranium Deposits in the Mesozoic Ordos Basin, North China. Andrew, C. et al. (eds.), Digging Deeper, Proc. 9th Biennial SGA Meeting, 20-23 August 2007, Irish Assoc. Econ. Geol., Dublin, v. 2, p. 1153-1156.

2005 - 2006

- [14] Basei, M.A.S., Frimmel, H.E., Nutman, A., Preciozzi, F., 2006, Provenance and depositional age of the Dom Feliciano Belt supracrustal units, Brazil – Uruguay: Correlations with SW-Africa. In Gaucher, C., Bossi, J., eds., V South American Symposium on Isotope Geology, Punta del Este, 24-27 August 2006, p. 45-48, ISBN 9974-0-0327-X.
- [13] Frimmel, H.E., Basei, M.A.S., 2006, Tracking down the Neoproterozoic connection between southern Africa and South America – a revised geodynamic model for SW-Gondwana amalgamation. in Gaucher, C., Bossi, J., eds., V South American Symposium on Isotope Geology, Punta del Este, 24-27 August 2006, p. 94-97, ISBN 9974-0-0327-X.
- [12] Frimmel, H. E., 2005, The world's largest gold province: Implications on Archaean atmospheric evolution, in Mao, J., and Bierlein, F. P., eds., Mineral Deposit Research: Meeting the Global Challenge, Proceedings of the 8th Biennial SGA Meeting, Beijing, 18-21 August 2005, Heidelberg, Springer, v. 2, p. 949-952.

- [11] Frimmel, H. E., Minter, W. E. L., Chesley, J., Kirk, J., and Ruiz, J., 2005, Short-range gold mobilisation in palaeoplacer deposits, *in* Mao, J., and Bierlein, F. P., eds., *Mineral Deposit Research: Meeting the Global Challenge*, Proceedings of the 8th Biennial SGA Meeting, Beijing, 18-21 August 2005, Heidelberg, Springer, v. 2, p. 953-956.

1999 - 2004

- [10] Frimmel, H. E., Groves, D. I., Kirk, J., Ruiz, J., Chesley, J., and Minter, W. E. L., 2004, The Witwatersrand gold supergiant: reasons for its uniqueness and consequences for exploration, *in* Muhling, J., Groves, D. I., Kenworthy, S., Knox-Robinson, C., and Vielreicher, N., eds., *SEG2004, Predictive Mineral Discovery Under Cover*: Perth, Geoconferences Inc., University of Western Australia, p. 191-194.
- [9] Frimmel, H. E. and Jonasson, I., 2003, The controls on Neoproterozoic base metal mineralization. In: Eliopoulos, D.G. et al. (Eds.), *Mineral Exploration and Sustainable Development*, 7th Biennial SGA Meeting, Athens, 24-28 August 2003, Millpress, Rotterdam, v. 2, p. 661-664.
- [8] Frimmel, H. E., 2001, Geodynamic and palaeoclimatic setting of the Neoproterozoic Rosh Pinah Zn-Pb province, southwestern Namibia. Piestrzynski A. et al. (eds.), *Mineral Deposits at the Beginning of the 21st Century*, Proc. 6th Biennial SGA-SEG Meeting, 26-29 August 2001, Krakow, Balkema (Rotterdam), 129-132.
- [7] Frimmel, H. E., Chetty, D., Board, W. S., 1999, Neoproterozoic evaporites and metallogenesis in Pan-African tectonic belts in southwestern Africa. In: Stanley, C. J. (ed.) *Mineral deposits: Processes to Processing*, 5th Biennial SGA Meeting and 10th Quadrennial IAGOD Symposium, 22-25 August 1999, London, Balkema (Rotterdam), p. 943-946.
- [6] Spangenberg, J., Frimmel, H. E., 1999, Tracking the origin of organic matter in the Witwatersrand Basin using ¹³C/¹²C analysis of individual hydrocarbons. In: Stanley, C. J. (ed.) *Mineral deposits: Processes to Processing*, 5th Biennial SGA Meeting and 10th Quadrennial IAGOD Symposium, 22-25 August 1999, London, Balkema (Rotterdam), p. 271-274.

1991 - 1997

- [5] Chetty, D., Verran, D., Frimmel, H. E., le Roex, A. P., 1997, The Khusib Springs Cu-Pb-Zn-Ag deposit, Otavi Mountain Land, Namibia - mineralisation of the "Tsumeb-type"? In: Papunen, H. (ed.), *Research and exploration - where do they meet?* 4th Biennial SGA Meeting, 11-13 August 1997, Rotterdam, Balkema, p. 531-534.
- [4] Frimmel, H. E., and Gartz, V. H., 1997, Which fluids caused the mobilisation of the gold in the Archean Witwatersrand Basin, South Africa? In: Papunen, H. (ed.) *Research and exploration - where do they meet?* 4th Biennial SGA Meeting, 11-13 August 1997, Rotterdam, Balkema, p.189-192.
- [3] Frimmel, H. E., Hoffmann, D., and Moore, J. M., 1993, Preservation of syn-depositional geochemical characteristics of the Broken Hill massive sulphide deposits, South Africa, during upper amphibolite facies metamorphism. In: Fenoll Hach-Ali, P, Torres-Ruiz, J, Gervilla, F (eds), *Current Research in Geology Applied to Ore Deposits*, Univ. Granada, Granada, p. 303-306.
- [2] Frimmel, H. E., 1991, Isotopic fronts in hydrothermally mineralized carbonate rocks. In: Pagel, M., and Leroy, J. L. (eds), *Source, Transport and Deposition of Metals*, Rotterdam (Balkema), 37-40.
- [1] Frimmel, H. E., and Minter, W. E. L., 1991, The mobility of Witwatersrand gold during post-depositional alteration. In: Pagel, M., and Leroy, J. L. (eds), *Source, Transport and Deposition of Metals*, Rotterdam (Balkema), p. 657-660.

4. Books

2018-2022

- [3] Okrusch, M., Frimmel, H.E., 2022, Mineralogie – Eine Einführung in die spezielle Mineralogie, Petrologie und Lagerstättenkunde. 10. Aufl., Springer Nature, Heidelberg, 844 p.
- [2] Okrusch, M., Frimmel, H.E., 2020, Mineralogy – An Introduction to Minerals, Rocks and Mineral Deposits. Springer Nature, Heidelberg, 719 p.
- [1] Höhn, S., Frimmel, H.E., 2018, Die Kupferberger Erzlagerstätte und ihre geologische Umgebung. WIRmachenDRUCK; Würzburg, 41 p.