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Biography

Dr. Tesfaye is a Senior Researcher with the title of Docent in *metallurgical thermodynamics* in the Johan Gadolin Process Chemistry Centre at Åbo Akademi University. He received his M.Sc. degree in *materials processing technology* and Ph.D. degree in *metallurgy* from Aalto University. His research activities are focused mainly on the thermodynamic investigation of inorganic materials as well as rigorous theoretical and experimental investigations for promoting improved valuable metals and renewable energy production. Dr. Tesfaye was also appointed as a Visiting Research Scientist in Seoul National University, South Korea, for 6 months (2018).

Dr. Tesfaye edited many scientific research books, and serves as Subject Editor for high-impact journals like *JOM* (Springer Nature). He is an active member of The Minerals, Metals & Materials Society (TMS), and is a winner of the 2018 TMS Young Leader Award. His personal research achievements include significant improvement of experimental research applying the solid-state EMF technique for thermodynamic studies, as well as remarkable contribution for promoting the move towards the circular economy. In his research areas, Dr. Tesfaye has published over 50 peer-reviewed publications.

Publications

Synthesis and Thermodynamic Investigation of Energy Materials in the Ag–Te–Cl System by the Solid-State Galvanic Cells

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Prokhorenko, S., Lindberg, D., Reshetnyak, O. & Hupa, L., 1 Mar 2021, (Accepted/In press) In: *JOM Journal of the Minerals, Metals and Materials Society*. 73, 5, p. 1-15 15 p.

The Equilibrium Phase Formation and Thermodynamic Properties of Functional Tellurides in the Ag–Fe–Ge–Te System

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Yarema, N., Lindberg, D., Reshetnyak, O. & Hupa, L., 28 Feb 2021, In: *Energies*. 14, p. 1-13

Materials Processing Fundamentals 2021

Lee, J. (ed.), Wagstaff, S. (ed.), Anderson, A. (ed.), Tesfaye, F. (ed.), Lambotte, G. (ed.) & Allanore, A. (ed.), 16 Feb 2021, 1 ed. Springer. 200 p. (The Minerals, Metals & Materials Series)

Ni-Co 2021: The 5th International Symposium on Nickel and Cobalt

Anderson, C. (ed.), Goodall, G. (ed.), Gostu, S. (ed.), Gregurek, D. (ed.), Lundström, M. (ed.), Meskers, C. (ed.), Nicol, S. (ed.), Peuraniemi, E. (ed.), Tesfaye, F. (ed.), Tripathy, P. (ed.), Wang, S. (ed.) & Zhang, Y. (ed.), 16 Feb 2021, 1 ed. Switzerland: Springer. 190 p. (The Minerals, Metals & Materials Series)

Thermodynamic examination of quaternary compounds in the Ag–Fe–(Ge, Sn)–Se systems by the solid-state EMF method

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Rudyk, B., Soliak, L., Lindberg, D., Reshetnyak, O. & Hupa, L., 4 Feb 2021, *Materials Processing Fundamentals 2021*. Lee, J., Wagstaff, S., Anderson, A., Tesfaye, F., Lambotte, G. & Allanore, A. (eds.). 1 ed. Springer International Publishing, p. 271-283 13 p. (The Minerals, Metals & Materials Series).

Thermodynamic Optimization of Critical Metals Processing and Recovery: Part I

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Non-activation synthesis and thermodynamic properties of ternary compounds of the Ag–Te–Br system

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Prokhorenko, S. & Reshetnyak, O., 16 Jan 2021, In: *Thermochimica Acta*. 698, p. 1-7 7 p., 178862.

Review of rhenium extraction and recycling technologies from primary and secondary resources

Shen, L., Tesfaye, F., Li, X., Lindberg, D. & Taskinen, P., 15 Jan 2021, In: *Minerals Engineering*. 161, p. 106719

Thermodynamic Optimization of Critical Metals Processing and Recovery: Part II

Iloeje, C., Tesfaye, F. & Anderson, A., 10 Jan 2021, (Accepted/In press) In: JOM. 73, 3, p. 1-3

Advances in the Circular Economy of Lanthanides

Tesfaye, F., Peng, H. & Zhang, M., 1 Jan 2021, In: JOM. 73, 1, p. 16-18 3 p.

Effect of Storage Time on the Physicochemical Properties of Waste Fish Oils and Used Cooking Vegetable Oils

Bruun, N., Tesfaye, F., Hemming, J., Dirbeba, M. & Hupa, L., 1 Jan 2021, In: Energies. 14, 1, p. 1-14 101.

Investigation of the K-Mg-Ca Sulfate System as Part of Monitoring Problematic Phase Formations in Renewable-Energy Power Plants

Tesfaye, F., Lindberg, D., Moroz, M. & Hupa, L., 15 Oct 2020, In: Energies. 13, 20, p. 5366 5366.

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Cleaner Manufacturing of Critical Metals

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Lee, J. (ed.), Wagstaff, S. R. (ed.), Lambotte, G. (ed.), Allanore, A. (ed.) & Tesfaye, F. (ed.), 2020, Springer. (The Minerals, Metals & Materials Series)

Solid-state electrochemical synthesis and thermodynamic properties of selected compounds in the Ag–Fe–Pb–Se system

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Kogut, Y., Tesfaye, F., Prokhorenko, S. & Tesfaye, F., 2020, In: Solid State Sciences. 107, p. 1–9

The Effect of Chemical Composition and Electrolyte Temperature on the Size and Structure of Cadmium Sulfide Nanocrystals Obtained by the Electrolytic Method

Danilevska, NB., Moroz, M., Nechyporuk, BD., Haievskya, SH., Novoseletskyi, MY., Prokhorenko, MV., Yarema, NP., Yukhymchuk, VO., Tesfaye, F. & Reshetnyak, OV., 2020, In: Journal of Nano- and Electronic Physics. 12, 4, p. 04035-1 - 04035-6 04035.

Thermodynamic Modeling of Sustainable Non-ferrous Metals Production: Part I

Tesfaye, F., Anderson, A. E. & Zhang, M., 2020, In: JOM Journal of the Minerals, Metals and Materials Society. 72, 7, p. 2739–2740

Thermodynamic Modeling of Sustainable Nonferrous Metals Production: Part II

Tesfaye, F., Anderson, A. E. & Zhang, M., 2020, In: JOM Journal of the Minerals, Metals and Materials Society. 72, 9, p. 3176–3178

Thermodynamic Properties of Layered Tetradymite-like Compounds of the Ag–Ge–Sb–Te System

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Lindberg, D., Reshetnyak, O. & Hupa, L., 2020, *Materials Processing Fundamentals 2020*. Lee, J., Wagstaff, S. R., Lambotte, G., Allanore, A. & Tesfaye, F. (eds.). Springer, p. 275–287

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Hamuyuni, J. & Tesfaye, F., 2019, *REWAS 2019*. Gaustad, G., Fleuriaux, C. M., Gökelma, M., Howarter, J., Kirchain, R., Kaka, M., Meskers, C., Neelameggham, N. R., Olivetti, E., Powell, A. C., Tesfaye, F., Verhulst, D. & Zhang, M. (eds.). Springer, p. 265–270

Factors affecting the corrosive behavior of used cooking oils and a non-edible fish oil that are in contact with ferrous metals

Bruun, N., Demesa, A., Tesfaye, F., Hemming, J. & Hupa, L., 2019, In: *Energies*. 12, 24, p. –

Recycling of Industrial Metals and Materials: Trends in Recent Research—Part I

Verhulst, D. E., Tesfaye, F. & Schlesinger, M. E., 2019, In: *JOM Journal of the Minerals, Metals and Materials Society*. 71, 9, p. 3164–3165

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Gaustad, G. (ed.), Fleuriaux, C. (ed.), Gökelma, M. (ed.), Howarter, J. A. (ed.), Kirchain, R. (ed.), Kaka, M. (ed.), Meskers, C. (ed.), Neelameggham, N. R. (ed.), Olivetti, E. (ed.), Powell, A. C. (ed.), Tesfaye, F. (ed.), Verhulst, D. (ed.) & Zhang, M. (ed.), 2019, Springer.

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Tesfaye, F., Moroz, M., Reshetnyak, O., Lindberg, D., Taskinen, P. & Hupa, L., 2019, *Thermophysical Properties of Complex Materials*. Shahzad, A. (ed.). InTechOpen, p. 1–19

Thermal Stability and Thermodynamics of the Ag₂ZnGeS₄ Compound

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Lindberg, D., Reshetnyak, O. & Hupa, L., 2019, *Materials Processing Fundamentals 2019*. Lambotte, G., Lee, J., Allanore, A. & Wagstaff, S. (eds.). Springer, Cham, p. 215–226 (The Minerals, Metals & Materials Series).

Thermochemical Data of Selected Phases in the FeO_x–FeSO₄–Fe₂(SO₄)₃ System

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An Overview of Advanced Chalcogenide Thermo- electric Materials and Their Applications

Tesfaye, F. & Moroz, M., 2018, In: *Journal of Electronic Research and Application*. 2, 2, p. 28–41

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Determination of the thermodynamic properties of the Ag₂CdSn₃S₈ and Ag₂CdSnS₄ phases in the Ag–Cd–Sn–S system by the solid-state electrochemical cell method

Moroz, M., Tesfaye, F., Demchenko, P., Prokhorenko, M., Lindberg, D., Reshetnyak, O. & Hupa, L., 2018, In: *Journal of Chemical Thermodynamics*. 118, p. 255–262

Experimental investigation and thermodynamic re-assessment of the ternary copper-nickel-lead system

Tesfaye, F., Vaajamo, I., Hamuyuni, J., Lindberg, D., Taskinen, P. & Hupa, L., 2018, In: *Calphad*. 61, p. 148–156

High-temperature oxidation of bismuth- and antimony-based sulfosalts

Tesfaye, F., Sukhomlinov, D., Lindberg, D., Moroz, M., Taskinen, P. & Hupa, L., 2018, In: *Mineral Processing and Extractive Metallurgy Review*. 40, 1, p. 67–78

The K₂SO₄–CaSO₄ System and Its Role in Fouling and Slagging During High-Temperature Processes

Tesfaye, F., Lindberg, D. & Hupa, L., 2018, *Materials Processing Fundamentals 2018*. Lambotte, G., Lee, J., Allanore, A. & Wagstaff, S. (eds.). Springer, p. –

Thermodynamic Investigation of Selected Metal Sulfates for Controlling Fouling and Slagging During Combustion

Tesfaye, F., Moroz, M., Lindberg, D., Hupa, L. & Jung, I-H., 2018, *23rd International Conference on Fluidized Bed Conversion - Innovative Fluidized Bed Conversion Technology for a Sustainable Development*. Kim, S-D. & Lee, J-M. (eds.). The Korean Institute of Chemical Engineers (KICChE), p. 1070–1077

Thermodynamic Properties of Magnetic Semiconductors Ag₂FeSn₃S₈ and Ag₂FeSn₄ Determined by the EMF Method

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Moroz, M., Tesfaye, F., Prokhorenko, M., Prokhorenko, S. & Reshetnyak, O., 2018, In: *Journal of Phase Equilibria and Diffusion*. 39, 1, p. 11–16

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Energy Technology 2017: Carbon Dioxide Management and Other Technologies

Zhang, L. (ed.), Drelich, J. W. (ed.), Neelameggham, N. R. (ed.), Post Guillen, D. (ed.), Haque, N. (ed.), Zhu, J. (ed.), Sun, Z. (ed.), Wang, T. (ed.), Howarter, J. A. (ed.), Tesfaye, F. (ed.), Ikhmayies, S. (ed.), Olivetti, E. (ed.) & William Kennedy, M. (ed.), 2017, Springer.

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Tesfaye, F. & Lindberg, D., 2017, *Materials Processing Fundamentals 2017*. Allanore, A., Lambotte, G. & Lee, J. (eds.). Springer, p. 55–64

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The Thermodynamics of Slag Forming Inorganic Phases in Biomass Combustion Processes

Lindberg, D. & Tesfaye, F., 2017, *Energy Technology 2017 : Carbon Dioxide Management and Other Technologies*. Zhang, L., Drelich, J. W., Neelameggham, N. R., Post Guillen, D., Haque, N., Zhu, J., Sun, Z., Wang, T., A Howarter, J., Tesfaye, F., Ikhmayies, S., Olivetti, E. & William Kennedy, M. (eds.). Springer, p. 27–41

Valuable Metals and Energy Recovery from Electronic Waste Streams

Tesfaye, F., Lindberg, D. & Hamuyuni, J., 2017, *Energy Technology 2017; Carbon Dioxide Management and Other Technologies*. Zhang, L., Drelich, J. W., Neelameggham, N. R., Post Guillen, D., Haque, N., Zhu, J., Sun, Z., Wang, T., A Howarter, J., Tesfaye, F., Ikhmayies, S., Olivetti, E. & William Kennedy, M. (eds.). Springer, p. 103–116

Solid state electrochemical and calorimetric study of the equilibrium phase (Cu, Ag)₂S

Tesfaye, F., Lindberg, D. & Taskinen, P., 2016, In: *Journal of Chemical Thermodynamics*. 94, p. 101–109

The Cu-Ni-S system and its significance in metallurgical processes

Tesfaye, F., Lindberg, D. & Taskinen, P., 2016, *2016 EPD Congress*. Allanore, A., Bartlett, L., Wang, C., Zhang, L. & Lee, J. (eds.). John Wiley & Sons, p. 29–37

Thermochemical properties of selected ternary phases in the Ag–Bi–S system

Tesfaye, F. & Lindberg, D., 2016, In: Journal of Materials Science. p. –

Thermodynamic study in the Ag–Sb–S system by the EMF method

Aspiala, M., Tesfaye, F. & Taskinen, P., 2016, In: Journal of Chemical Thermodynamics. 98, p. 361–366

Electrochemical study on the Ag–Sb system by advanced experimental method

Aspiala, M., Tesfaye, F. & Taskinen, P., 31 May 2015, In: Electrochimica Acta. 173, p. 649-655 7 p., 24998.

Experimental thermodynamic study on the Ag–Sb system at elevated temperatures

Aspiala, M., Tesfaye, F. & Taskinen, P., 2015, *EPD Congress 2015 - Held During TMS 2015 144th Annual Meeting and Exhibition*. Yurko, J. A., Yurko, J. A., Allanore, A., Bartlett, L., Bartlett, L., Lee, J., Zhang, L., Zhang, L., Zhang, L., Tranell, G., Meteleva-Fischer, Y., Ikhmayies, S., Ikhmayies, S., Budiman, A. S., Tripathy, P. & Fredrickson, G. L. (eds.). January ed. Minerals, metals and materials society, p. 305-312 8 p. (TMS Annual Meeting; vol. 2015-January, no. January).

Thermodynamic stability of Ca₃TeO₆ determined by a solid electrolyte EMF method

Sukhomlinov, D., Tesfaye, F. & Taskinen, P., 2015, In: Thermochimica Acta. 615, p. 38–42

Electrochemical study of the thermodynamic properties of matildite (B–AgBiS₂) in different temperature and compositional ranges

Tesfaye, F. & Taskinen, P., Jun 2014, In: Journal of Solid State Electrochemistry. 18, 6, p. 1683-1694 12 p.

Experimentally determined thermodynamic properties of schapbachite (α -AgBiS₂) below T = 700 K

Tesfaye, F. & Taskinen, P., Mar 2014, In: Journal of Chemical Thermodynamics. 70, p. 219-226 8 p.

Thermodynamic properties of equilibrium phases in the Ag–Cu–S system below 500 K: Experimental study

Tesfaye, F. & Taskinen, P., 2014, *EPD Congress 2014 - Held During TMS 2014 143rd Annual Meeting and Exhibition*. Minerals, metals and materials society, p. 185-194 10 p. (TMS Annual Meeting).

Experimental thermodynamic study of the equilibrium phase AgBi₃S₅ by an improved EMF method

Tesfaye, F. & Taskinen, P., 20 Jun 2013, In: Thermochimica Acta. 562, p. 75-83 9 p.

Experimental thermodynamic study of intermetallic phases in the binary Ag–Te system by an improved EMF method

Tesfaye, F., Taskinen, P., Aspiala, M. & Feng, D., Mar 2013, In: Intermetallics. 34, p. 56-62 7 p.

Thermodynamic stability of Ag₂Se from 350 to 500 K by a solid state galvanic cell

Feng, D., Taskinen, P. & Tesfaye, F., 2013, In: Solid State Ionics. 231, p. 1-4 4 p.

Experimental thermodynamic study of the equilibrium phase assemblage AgBi₃S₅–Bi₂S₃–S

Tesfaye, F. & Taskinen, P., 2012, *International Smelting Technology Symposium, Incorporating the 6th Advances in Sulfide Smelting Symposium - Held During the TMS 2012 Annual Meeting and Exhibition*. Minerals, metals and materials society, p. 213-221 9 p. (TMS Annual Meeting).

Thermodynamic investigation of intermetallic phases in the binary system Ag–Te

Tesfaye, F., Taskinen, P. & Aspiala, M., Jun 2011, *Proceedings - European Metallurgical Conference, EMC 2011*. Vol. 3. p. 1111-1124 14 p. (Proceedings - European Metallurgical Conference, EMC 2011; vol. 3).

Activities

Energies (Journal)

Fiseha Tesfaye (Editor), Minkyu Paek (Editor), Daniel Lindberg (Editor) & Leena Hupa (Editor)

1 Nov 2020 → 31 Jul 2021

Central South University

Fiseha Tesfaye (Visiting researcher)

1 Dec 2019 → 8 Jan 2020

JOM: The Journal of The Minerals, Metals Materials Society (TMS) (Journal)

Fiseha Tesfaye (Editor)

21 Mar 2019 → 20 Mar 2022

Seoul National University

Fiseha Tesfaye (Visiting researcher)

1 Mar 2018 → 31 Aug 2018

Prizes**2018 TMS Young Leaders Award**

Tesfaye, Fiseha (Recipient), 2018

Awards**Projects**