Academic CV

Name:	Steinar Løve Ellefmo
Professional position:	Professor, Norwegian University of Science and Technology (NTNU), Department of Geoscience and Petroleum
Born:	February 24. 1973
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ORCID:	https://orcid.org/0000-0002-8799-9819
Google Scholar:	https://scholar.google.com/citations?user=18M4X_wAAAAJ&hl=no&oi=ao
h-index	11
I10-index	13
RSI	348.1 (Research Interest Score)
Marital status	Common law wife, Susanne Pieper
Children	Eva (born 2004) and Live (born 2006)

Academic degrees

1993	1999	MSc (siv.ing), Resource geology. Norwegian University of Science and Technology (NTNU), Trondheim, Norway. Department of Geology and Mineral Resources Engineering.
2001	2005	PhD (Dr. ing), Mining engineering. Norwegian University of Science and Technology (NTNU), Trondheim, Norway. Department of Geology and Mineral Resources Engineering.

Research projects and role

Project	Project content	Funding	When	Role
Blue Mining	Deep Sea mining; exploration and exploitation technologies	EU, Seventh Framework Program	2014-2018	NTNU representative and task leader
InRec	Geometallurgy for industrial minerals	Norwegian Research Council and industry	2014-2019	WP leader and project manager
MAP	Development of a Mineral Resource Assessment Platform	EU / EIT	2018-2020	WP manager
MarMine	Deep sea mining; exploitation- and exploration technologies, environmental aspects	Norwegian Research Council and industry	2015-2020	WP leader and part of the management group
Pilot Program for Deep Sea Mining	Interdisciplinary program on Deep Sea Mining	NTNU, EU, Norwegian Research Council	Ongoing	Project manager, facilitator, and PhD- and post doc-supervisor
Marine mineral resources in Norwegian	This pre-project looked at the geological and economical potential of marine mineral	Industry funding	2013-2014	Project manager

waters; a survey of knowledge and research needs	resources along the part of the mid-Atlantic ridge which is inside Norwegian EEZ.			
Lefdal Mine Datacenter	Assessed the potential establishment of a data center (data storage and processing capacity) in an operating underground olivine / dunite mine in Norway.	Industry funding	2010-2010	Project worker, task leader. Responsible for aspects related to mining and geology
Rana Gruber AS, underground mining method assessment	Mining method assessment of the deeper parts of the Kvannevann iron ore. One of seven participants in the external group that assisted the Norwegian mining company Rana Gruber AS.	Industry funding	2008-2008	Project worker, task leader. Responsible for 3D geometric modelling and geostatistics.

In addition, I was the first point of contact for the Blue Nodule and the JPIO-projects that NTNU became a part of. However, my expertise was not relevant for the role NTNU was perceived to have in these projects, so the management was transferred to scientifically more relevant colleagues at NTNU.

Work Experience

2021	Present	Professor in geomodelling and lecturer in mining engineering and mining geology, NTNU
2020	2021	Associate professor in resource modeling (mining geology) and lecturer mining engineering, NTNU
2019	2020	Sabbatical at University of Queensland. Worked on open pit optimization for industrial mineral and deep-sea operations and on the use of soft data in mineral resource estimation.
2010	2019	Associate professor in resource modeling (mining geology) and lecturer mining engineering, NTNU
2009	2010	Industry researcher and lecturer at NTNU within mining engineering and resource modeling (mining geology)
2008	2009	Independent consultant within resource estimation and data management
2007	2008	Mine geologist for North Cape Minerals AS (now Sibelco Nordic AS).
2005	2007	Post doc researcher at NTNU including a research stay at UQ / SMI in Brisbane / Australia
2000	2003	Project manager for the IT-development Program for the Norwegian Mining Industry, which focused on developing and implementation of IT-solutions for the Norwegian mining industry. The position required a tight cooperation with the Norwegian mining industry, the software suppliers and trade organization.
1999	2000	Project co-worker for the IT-development Program for the Norwegian Mining Industry

Exchange studies and courses

Sept.	2003	Course: *Geostatistical Mineral Resource / Ore Reserve Estimation and Meeting JORC Requirements: Step by Step from Sampling to Grade Control*, UQ / BRC, Brisbane

		Australia
1997	1998	Master studies / exchange year at Technical University Bergakademie Freiberg. Courses in regional geology, tectonics, and mathematical geosciences.
Nov.	1998	Course: *Image Processing Applied to Remote Sensing and Geographical Information Systems.* Ecole des Mines, Paris France

Organized Continuing Education and Professional Development Courses

2016	2016	*"Value Creation through Optimal Management of Mineral Resources"*. Organized as part of the InRec-project with external presenter for the Norwegian mining industry. Presenter: Dr. Micah Nehring.
2013	2013	*"Geostatistics and block modeling"*. Two-day course given to Elkem AS - Silicon Materials. Presenter: Steinar Løve Ellefmo
2013	2013	*"Leapfrog Geo".* A three-day course organized for the Norwegian mining industry in close cooperation with Leapfrog (now Seequent) and Touch Water. Presenter: Dr. Thomas Krom
2012	2012	*"Real Options in Mine Project Evaluation".* Organized with external presenter for the Norwegian mining industry. Presenter: Dr. Luis Martinez.
2006	2006	*"Process analysis and introduction to geostatistics"*. Course given to Tata Steel while being visiting scholar at BRC / SMI in Brisbane. Presenter: Steinar Løve Ellefmo

Organizational experience

2019	2019	Proposal manager for successful proposal to host IAMG congress in Trondheim 2023 (originally planned for 2022, but moved due to corona)
2017	2017	Local co-organizer of Nordic Mine Surveyors Meeting
2014	2015	Manager of an application process towards submission of a H2020 application within geomodelling and exploration technologies and –strategies applied to marine minerals.
2010	present	Departmental hiring committees for professorships in mining engineering, mineral resource management, minerals engineering and deep-sea mining.
2010	2017	Chairman of the executive Bergringen board. Bergringen is a collaboration between NTNU, the students and the Norwegian mining industry to strengthen the contact between the involved parties.
2009	2010	Bergringen Board member

Software competencies

Advanced	Microsoft Office, MicroStation (CAD), Isatis and SGeMS (geostatistics), Leapfrog Geo and Leapfrog Works (rapid mine data processing and 3D modelling tool), MiningMath (direct block scheduling tool for open pit optimization), GeoX (play and prospect analysis).
Intermediate	Gems, Surpac and Datamine (mine planning and 3D geological modelling tools), Mineable Stope Optimiser (as it is implemented in Datamine), MatLab, MiniTab, ContextCapture (photogrammetry), ArcGIS, QGIS, Adobe Photoshop, GIMP
Basic	Lab View (graphical programming)

Languages

Norwegian (native), English (very good) and German (good; exchange year in Germany).

Memberships

2006	present	Member Australasian Institute of Mining and Metallurgy (AusIMM)
2011	present	Member Society of Mining Professors (SOMP)
2019	present	Member Society of Economic Geologists (SEG)

Software and teaching aid developments

Developed in cooperation with a colleague (Senior Engineer Torkjell Breivik) at Department of Geoscience and Technology a software for geostatistical analysis of music with co-workers. Used as a teaching aid in lectures in geostatistics (sampling, variogram modelling, estimation, and simulation). Teaching aid presented in:

Ellefmo, S., Breivik, T., Nehring, M., & Ballantyne, J. 2020. M3G: Music as a Metaphor in Mining Geostatistics. In The Trenches, 10(3), 11–13.

Selected publications

Complete list of publications can be found at:

https://wo.cristin.no/as/WebObjects/cristin.woa/wa/fres?sort=ar&pnr=37693&action=sok

All peer reviewed contributions have been included in the lists below.

Theses

Ellefmo, S.L. (2005). *From deposit to product - A probabilistic approach to the value chain of underground iron ore mining* (Dr. ing). Norwegian University of Science and Technology, Trondheim. https://ntnuopen.ntnu.no/ntnu-xmlui/handle/11250/231272

Ellefmo, S. L. (1999). *Resource evaluation of the Upper Jurassic play in the southern North Sea with special emphasis on the sub play covering Ula and Gyda deposits including adjacent prospects and leads* (MSc Thesis, not available online). Norwegian University of Science and Technology, Trondheim.

Peer reviewed articles in scientific journals (alphabetical order)

Blachowski, J., Ellefmo, S., Ludvigsen, E., (2011). Monitoring system for observations of rock mass deformations caused by sublevel caving mining system. Acta Geodynamica et Geomaterialia 8, 335–344.

Dumke, I., Nornes, S.M., Purser, A., Marcon, Y., Ludvigsen, M., Ellefmo, S.L., Johnsen, G., Søreide, F., (2018). First hyperspectral imaging survey of the deep seafloor: High-resolution mapping of manganese nodules. Remote Sensing of Environment 209, 19–30. https://doi.org/10.1016/j.rse.2018.02.024

Dumke, I., Ludvigsen, M., Ellefmo, S.L., Søreide, F., Johnsen, G., Murton, B.J., (2019). Underwater Hyperspectral Imaging Using a Stationary Platform in the Trans-Atlantic Geotraverse Hydrothermal Field. IEEE Trans. Geosci. Remote Sensing 57, 2947–2962. https://doi.org/10.1109/TGRS.2018.2878923

Eidsvik, J., & Ellefmo, S. L. (2013). The Value of Information in Mineral Exploration Within a Multi-Gaussian Framework. Mathematical Geosciences, 45(7), 777–798. https://doi.org/10.1007/s11004-013-9457-2

Ellefmo, S.L., Kuhn, T., (2020). Application of Soft Data in Nodule Resource Estimation. Natural Resources Research 30, 1069–1091. https://doi.org/10.1007/s11053-020-09777-2

Ellefmo, S. L., Aasly, K., Lang, A., Vezhapparambu, V. S., & Silva, C. A. M. (2019). Geometallurgical Concepts Used in Industrial Mineral Production. Economic Geology, 114(8), 1543–1554. https://doi.org/10.5382/econgeo.4685

Ellefmo, S. L., & Eidsvik, J. (2008). Local and Spatial Joint Frequency Uncertainty and its Application to Rock Mass Characterisation. Rock Mechanics and Rock Engineering, 42(4), 667. https://doi.org/10.1007/s00603-008-0009-x

Ellefmo, S.L., 2011. Ressursestimering med analysedata av ulik kvalitet. Mineralproduksjon 1, 14. http://mineralproduksjon.no/wp-content/uploads/2017/03/mp1-01-va-steinar-ellefmo.pdf. *(eng.: Resource estimation using data with varying quality / uncertainty)*

Juliani, C., & Ellefmo, S. L. (2018a). Resource assessment of undiscovered seafloor massive sulfide deposits on an Arctic mid-ocean ridge: Application of grade and tonnage models. Ore Geology Reviews, 102, 818–828. https://doi.org/10.1016/j.oregeorev.2018.10.002

Juliani, C., & Ellefmo, S. L. (2018b). Probabilistic estimates of permissive areas for undiscovered seafloor massive sulfide deposits on an Arctic Mid-Ocean Ridge. Ore Geology Reviews, 95, 917–930. https://doi.org/10.1016/j.oregeorev.2018.04.003

Juliani, C., & Ellefmo, S. L. (2019a). Prospectivity Mapping of Mineral Deposits in Northern Norway Using Radial Basis Function Neural Networks. Minerals, 9(2), 131. https://doi.org/10.3390/min9020131

Juliani, C., & Ellefmo, S. L. (2019b). Multi-scale Quantitative Risk Analysis of Seabed Minerals: Principles and Application to Seafloor Massive Sulfide Prospects. Natural Resources Research, 28(3), 909–930. https://doi.org/10.1007/s11053-018-9427-y

Lang, A. M., Aasly, K., & Ellefmo, S. L. (2018). Mineral characterization as a tool in the implementation of geometallurgy into industrial mineral mining. Minerals Engineering, 116, 114–122. https://doi.org/10.1016/j.mineng.2017.10.021

Lang, A. M., Ellefmo, S. L., & Aasly, K. (2018). Geometallurgical Flowsheet as a Tool for Designing and Communicating Geometallurgical Programs. Minerals, 8(9), 372. https://doi.org/10.3390/min8090372

Lesage, M., Juliani, C., & Ellefmo, S. (2018). Economic Block Model Development for Mining Seafloor Massive Sulfides. Minerals, 8(10), 468. https://doi.org/10.3390/min8100468

Mena Silva, C., Sørensen, B., Aasly, K., & Ellefmo, S. (2018). Geometallurgical Approach to the Element-to-Mineral Conversion for the Nabbaren Nepheline Syenite Deposit. Minerals, 8(8), 325. https://doi.org/10.3390/min8080325

Mena Silva, C. A.; Ellefmo, S. L.; Sandøy, R.; Sørensen, B. E.; Aasly, K. (2020). A neural network approach for spatial variation assessment – A nepheline syenite case study. Minerals Engineering. vol. 149.

Vezhapparambu, V. S., Eidsvik, J., & Ellefmo, S. L. (2018). Rock Classification Using Multivariate Analysis of Measurement While Drilling Data: Towards a Better Sampling Strategy. Minerals, 8(9), 384. https://doi.org/10.3390/min8090384

Vezhapparambu, V. S. and Ellefmo, S. L. (2020). Estimating the blast sill thickness using changepoint analysis of MWD data. International Journal of Rock Mechanics and Mining Sciences. Volume 134, October 2020. https://doi.org/10.1016/j.ijrmms.2020.104443

Peer reviewed books and book chapters

Ellefmo, S. L., Søreide, F., Cherkashov, G., Juliani, C., Panthi, K. K., Petukhov, S., et al. (2019). Quantifying the Unknown - Marine Mineral Resource Potential on the Norwegian Extended Continental Shelf. Cappelen Damm Akademiske. https://doi.org/10.23865/noasp.81

Ellefmo, S. L (2021). Conceptual 3D modelling and direct block scheduling of a massive seafloor sulfide occurrence. Manuscript submitted and accepted for publication. Planned print publication date: November 2021

Selected conference presentations

Ellefmo, S. L.; Eidsvik, J. (2011). Fast detection of outliers and anomalies in joint frequency data. IAMG 2011; 2011-09-05 - 2011-09-09 NTNU

Ellefmo, S. L.; Eidsvik, J. (2012). The value of imperfect borehole information in mineral resource evaluation. Geostat 2012; 2012-06-11 - 2012-06-15 NTNU

Ellefmo, S. L.; Søreide, F.; Sinding-Larsen, R. (2014). Marine Minerals and Ocean Mining Potential in the North Atlantic - Results. UMI 2014; 2014-09-21 - 2014-09-28 NTNU

Ellefmo, S. L.; Aasly, K. (2014). Increased recovery in the Norwegian Mining industry by implementing the Geometallurgical concept - InRec. Vårmøtet 2014; 2014-05-08 - 2014-05-09 NTNU

Ellefmo, S. L.; Sotiriou, P.; Juliani, C. J. (2015). A synthetic super analogue for Mid-Atlantic Ridge seafloor massive sulphide deposits. SGA 2015; 2015-08-24 - 2015-08-27 NTNU

Ellefmo, S. L. (2015). Use and analysis of MWD-data to increase selectivity in an industrial mineral operation. IAMG 2015; Freiberg.

Ellefmo, S. L. (2017). The Deep-Sea Mining Pilot – An interdisciplinary approach to deep sea mining. 113th Annual GSA Cordilleran Section Meeting – 2017. Hawaii, USA. 23.05.2017. Geological Society of America Abstracts with Programs. Vol. 49, No. 4. DOI: 10.1130/abs/2017CD-292448

Ellefmo, S. L.; Ludvigsen, M.; Frismanslund, E. K. T. (2017) Full cycle resource evaluation of SMS deposits along the Arctic Mid Ocean Ridge. The International Conference on Ocean, Offshore and Arctic Engineering; 2017-06-25 - 2017-06-30 NTNU

Ellefmo, S. L.; Sinding-Larsen, R.; Juliani, C. J.; Lesage, M.; Frimanslund, E. K. T. (2017). Uncertainty management and project commerciality evaluation in deep-sea mining. 46th Underwater Mining Conference 2017; 2017-09-25 - 2017-09-26 NTNU

Ellefmo, S. L.; Kuhn, T. (2018). Towards an improved nodule resource estimation and classification using hard and soft data. 47th Underwater Mining Conference 2018; 2018-09-10 - 2018-09-14 NTNU

Ellefmo, S. L.; Juliani, C. J; Sinding-Larsen, R. (2019). Methodology for quantifying the aggregated seafloor mineral resource potential along the mid-Atlantic ridge. NGF Winter Conference Bergen; 2019-01-07 - 2019-01-09 NTNU

Juliani, C. J.; Ellefmo, S. L. (2017). Probabilistic Methodologies for Ocean Floor Characterization and Mineral Resource Estimates. IAMG 2017; 2017-09-03 - 2017-09-07 NTNU

Ludvigsen, M.; Søreide, F.; Sture, Ø.; Aasly, K.; Ellefmo, S. L.; Zylstra, M.; Pardey, M. (2017). ROV based drilling for deep sea mining exploration. Oceans 2017; 2017-06-19 - 2017-06-22 NTNU

Mena Silva, C. A.; Aasly, K.; Ellefmo, S. L. (2017). Sample selection based on predefined multivariate geochemical domains. SGA 2017; 2017-08-19 - 2017-08-23 NTNU

Tøgersen, M. K.; Aasly, K.; Ellefmo, S. L.; Kleiv, R. A. (2017). Mineralogy and texture of the Storforshei iron formation, and their effect on grindability. Process Mineralogy 17'; 2017-03-20 - 2017-03-22 NTNU

Vezhapparambu, V. S.; Ellefmo, S. L. (2017). Change point analysis of MWD-data to detect the broken ground thickness in open pit mining. 18th annual conference IAMG-2017 2-9 september, Perth, Australia; 2017-09-02 - 2017-09-09 NTNU

Vezhapparambu, V.S., Ellefmo, S.L., (2017). Towards a specific geometallurgical flowsheet for a marble operation using the IDEF0 methodology. Presented at the 14th Biennial SGA Meeting, p. 4.

Editor reviewed popular scientific papers

Ellefmo, S. L. (2015a). Rapportering etter vedtatte normer. Geo365.no. 10.09.2015. https://geo365.no/bergindustri/rapportering-etter-vedtatte-normer/

Ellefmo, S. L.; Carson, S. G.; Haugan, I. (2015). Vi kjenner månen bedre enn havbunnen. Gemini [Fagblad] 2015-05-05. https://gemini.no/2015/05/vi-kjenner-manen-bedre-enn-havbunnen-var/

Aasly, K.; Ellefmo, S. L.; Ludvigsen, M. (2016). På skattejakt til Jan Mayen. Under Dusken Nr 7, 2016-04-19. NTNU. https://dusken.no/media/publications/2016/UD-2016-7.pdf

Ellefmo, S., Breivik, T., Nehring, M., & Ballantyne, J. (2020). M3G: Music as a Metaphor in Mining Geostatistics. In The Trenches, 10(3), 11–13.

Ellefmo, S. L. (2020). Kvantifisering av det ukjente. Geo365.no, 22.07.2020. https://geo365.no/dyphavsmineraler/kvantifisering-av-det-ukjente/

Ellefmo, S. L.; Aasly, K.; Ludvigsen, M.; Søreide, F. (2020). Mineralutvinning på havbunnen? Skipsrevyen 2020. Volum 50.(4) s. 44-46

Newspaper chronicles

Ludvigsen, M.; Aasly, K.; Ellefmo, S. L. (2016). Gull på havbunnen? Dagens næringsliv 15.08.16. https://www.dn.no/industri/havbruk/miljo/gull-pa-havbunnen/1-1-5708634

Schjølberg, I.; Ellefmo, S. L.; Carson, S. G. (2018). Mineralutvinning på havbunnen. Adressavisen 26.05.2018. https://www.midtnorskdebatt.no/meninger/kronikker/2018/05/26/Mineralutvinning-p%C3%A5-havbunnen-16771204.ece

Ellefmo, S. L.; Aasly, K.; Søreide, F. (2020). Ligger vår fremtid på havdypet? Adresseavisen 2020. https://www.midtnorskdebatt.no/meninger/kronikker/2020/05/24/Ligger-v%C3%A5r-fremtid-p%C3%A5-havdypet-21895232.ece

Aasly, K.; Ellefmo, S. L. (2020). Gjenvinning er bare en liten del av løsningen. Adresseavisen 2020 s. 39-39. https://www.midtnorskdebatt.no/meninger/ordetfritt/2020/09/16/Gjenvinning-er-bare-en-liten-del-av-l%C3%B8sningen-22650736.ece. 16.09.2020.

Media appearances

Ellefmo, S. L. (2013). Norge kan sitte på en ny gullgruve. NRK Distriktsnyheter Midtnytt. https://tv.nrk.no/serie/distriktsnyheter-midtnytt/201312/DKTL98121613/avspiller. Published 16.12.2013.

Ellefmo, S. L. (2018). Gruvedrift på havbunnen. NRK Ekko [Radio] 15.05.2018

Ellefmo, S. L. (2016). MarMine. NRK Distriktsnyheter Midtnytt. https://tv.nrk.no/serie/distriktsnyheter-midtnytt/201609/DKTL99092216/avspiller. Published 22.09.2016.

Ellefmo, S. L. 2020. Er mineraler på havbunnen et nytt industrieventyr? Kystpuls. Apple postcast. Senter for Hav og Arktis. https://podcasts.apple.com/no/podcast/er-mineraler-p%C3%A5-havbunnen-et-nytt-industrieventyr/id1534536198?i=1000496186753

Scientific and consulting reports

Ellefmo, S. (2005). Confidential. Contractor: Rana Gruber AS. NTNU report number 2005-002sle.

Ellefmo, S. (2005). Confidential. Contractor: Rana Gruber AS. NTNU report number 2005-001sle.

Ellefmo, S. (2006). Confidential. Contractor: MoMin AS. NTNU report number 2006-006sle. 10p.

Ellefmo, S. (2006). Confidential. Contractor: MoMin AS. NTNU report number 2006-005sle

Ellefmo, S. (2006). Confidential. Contractor: Rana Gruber AS. NTNU report number 2006-004sle. 16p.

Ellefmo, S. (2006.) Confidential. Contractor: MoMin AS. NTNU report number 2006-003sle.

Ellefmo, S. (2006). Confidential. Contractor: Rana Gruber AS. NTNU report number 2006-002sle.

Ellefmo, S. (2007). Confidential. Contractor: MoMin AS. NTNU report number 2007-001sle. 6p.

Ellefmo, S. (2008). Confidential. Contractor: Rana Gruber AS. NTNU report number 2008-001sle.

Ellefmo, S. (2009). Confidential. Contractor: Skaland Graphite AS. NTNU report number 2009-004sle

Ellefmo, S. (2009). Confidential. Contractor: Rana Gruber AS. NTNU report number 2009-003sle

Ellefmo, S. (2009). Confidential. Contractor: Rana Gruber AS. NTNU report number 2009-002sle

Ellefmo, S.; Kristiansen, R. (2010). Confidential. Contractor: Local Host AS. NTNU report number M-SLE 2010:1.

Ellefmo, S. (2010a). Review of structural elements that have the potential of influencing the influx of water from the river Lilleåga and into the Kvannevann underground mine. Contractor: Rana Gruber AS. Report Number M-SLE 2010:17

Ellefmo, S. L. (2010b). En evaluering av studieprogrammet Tekniske geofag ved Institutt for geologi og bergteknikk (No. Rapport 2.1 Kandidatbehov) (p. 36). Trondheim: NTNU.

Ellefmo, S. L. (2014). Fra videregående skole til PhD - et sammenhengende studieløp (No. M-SLE 2014:29) (p. 34). Trondheim: NTNU.

Ellefmo, S. L. (2016). MWD-workshop. Brønnøysund October 2016. Discussion sum-up and presentations. Department of geoscience and petroleum 2016 94 p. NTNU, Trondheim

Ellefmo, S. L., & Aasly, K. (2019). InRec – Five years of geometallurgy on industrial mineral operations. Objectives, results, and the future, 25 p. NTNU, Trondheim

Ellefmo, S. L., & Juliani, C. J. (2020). SMS testing report (No. MAP0007: D5.7. EiT Raw Material) (p. 47). Trondheim.

Laugesen, J.; Aasly, K.; Ellefmo, S. L. 2021. Teknologirappport Havbunnsmineraler, DNV rapport nr 1231487. Høvik, Norge: DNV 2021 128 s.

Ludvigsen, M.; Aasly, K.; Ellefmo, S. L.; Hilário, A.; Ramirez-Llodra, E.; Søreide, F; Falcon-Suarez, I.; Juliani, C; Kieswetter, A.; Lim, A.; Malmquist, C.; Nornes, S. Melvær; Reimers, H.; Paulsen, E.; Sture, Ø. (2016). NTNU Cruise reports 2016 no 1 - MarMine cruise report Arctic Mid-Ocean Ridge 15.08.2016 - 05.09.2016. Trondheim: NTNU 2016 120 s. NTNU Cruise reports (1) NIVA NTNU

Ramirez-Llodra, E.; Bergstad, O. A.; Kutti, T.; Armstrong, C. W.; Ellefmo, S. L.; Heldal, T.; Baker, M. (2015). ECOMINA - Ecosystem-based management for areas targeted by deep-sea mining in the Arctic: a pilot study. Final Report. Oslo: NIVA. Report submitted to MIKON, Fram Centre. 2015 6 s.

Aasly, K.; Ellefmo, S.; Kleiv, R. A.; Ludvigsen, M.; Ramirez.Llodra, E. and Søreide, F. (2021) MarMine Final report – 247626 Results report KPN under BIA. NTNU M-KAA 2021:4

Supervision, PhD

Supervised PhD theses (alphabetical order)

Juliani, C. J. (2019). Assessment of undiscovered mineral resource potential at the Northern Mid-Atlantic ridge (MAR) and on the Norwegian mainland: Method development and applications. Norwegian University of Science and Technology.

Lesage, M. (2020). A framework for evaluating deep sea mining systems for seafloor massive sulphides deposits. Norwegian University of Science and Technology.

Vezhapparambu, V. S. (2019). Statistical analysis of MWD data in a geometallurgical perspective. Norwegian University of Science and Technology.

Co-supervised PhD theses (alphabetical order)

Lang, A. M. (2020). A Geometallurgical Approach Applied to the Tromsdalen Calcite Operation. Norwegian University of Science and Technology.

Silva, C. A. M. (2019). Geometallurgical Modelling of the Stjernøya Nepheline Syenite Mine. Norwegian University of Science and Technology.

Tøgersen, M. K. (2019). Mineralogical and textural characterisation for increased iron oxide recovery - Exemplified on the Storforshei iron formation. Norwegian University of Science and Technology.

Supervision, master theses

Supervised master theses (alphabetical order)

Dombrowsky, J. M. (2018). Reserve classification of a Solwara 1 type deposit at AMOR. Norwegian University of Science and Technology.

Gjengedal, S. (2013). Ladningsberegning basert på frekvensveide vibrasjonskrav. Norwegian University of Science and Technology. *(eng.: Blast design based on frequency weighted calculation of vibrations)*

Hilmarsen, T. H. (2013). Dagbruddsalternativer i en industrimineralforekomst. Norwegian University of Science and Technology. *(eng.: Open pit alternatives for an industrial mineral operation (contained elements of open pit optimization))*

Isaksen, S. (2017). Assessment of underground alternatives at Engebø rutile deposit using the Mineable Shape Optimizer. Norwegian University of Science and Technology.

Langaas, C. (2014). Testing og evaluering av EVA-baserte sprøytbare membraner for permanent vanntett tunnelkledning med sprøytebetong for veg- og jernbanetunneler. Norwegian University of Science and Technology. *(eng.: Testing and evaluation of EVA shotcrete membranes for permanent waterproof lining in road and railway tunnels)*

Lorentzen, A. P. (2016). Romlig mineralogisk og geofysisk karakterisering av Nabberen nefelinsyenittforekomst - Med utgangspunkt i definerte geokjemiske domener og med fokus på forekomsten av magnetitt. Norwegian University of Science and Technology. *(eng.: Spatial mineralogical and geophysical characterization of the Nabbaren nepheline syenite deposit – Based on predefined geochemical domains and with focus on the presence of magnetite)*

Martinelli, E. (2014). Om dagbruddsveggen ved Elkem Tana. Norwegian University of Science and Technology. *(eng.: About the pit wall at the Elkem Tana quartzite open pit operation)*

Nesheim, H. F. (2018). Prosessbeskrivelse av et pukkverk - en kostnads- og optimaliseringsstudie. Norwegian University of Science and Technology. *(eng.: Process analysis and description of an aggregate production plant – a cost and optimization study)*

Nørsett, S. M. (2016). Geometric and Qualimetric Modelling of the Hessjø deposit. Norwegian University of Science and Technology.

Ommedal, A. (2013). Design parameters for the Engebø open pit. Norwegian University of Science and Technology.

Pedersen, A. H. (2014). Large-Scale Underground Mining in Tromsdalen. Norwegian University of Science and Technology.

Refsli, C. D. (2013). Analysis of Deformation and Stress Distribution around Stopes in Mining using a Combination of Geostatistics and Numerical Analysis. Norwegian University of Science and Technology.

Reimers, H. (2017). The Morphology of the Mohn's Ridge. Norwegian University of Science and Technology.

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Member of grading committees at PhD defenses at Luleå University of Technology:

2019 – Mr. Victor Lishcuk: *Bringing predictability into a geometallurgical program. An iron ore case study*

2020 – Mr. Maher Zainy: *Tectonic Evolution of the Zagros Suture-and Imbricate Zones in Iraq*

Member of committee for PhD progress assessment at UQ / JKMRC:

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