

# LITHOSPHERE 2022 Symposium

## Programme

**Tuesday, Nov 15**

09:00 - 10:00 Registration and hanging up posters at the entrance hall of Arken, Åbo Akademi University

### 10:00 - 10:15 Opening and greetings

10:00 - 10:05 **Pietari Skyttä**, Dept. Geography and Geology, University of Turku

10:05 - 10:10 **Patrik Henelius**, Dean of the Faculty of Science and Engineering, Åbo Akademi

10:10 - 10:15 **Hans Thybo**, President of the International Lithosphere Program (ILP)

### 10:15 - 12:05 Session 1: Lithosphere structure and evolution from upper crust to asthenosphere

*Chair: Pietari Skyttä*

10:15 - 10:50 **M. Malinowski, S. Mazur and M. Mezyk [Invited]**

Exploring East European Craton crust in Poland using state-of-the-art deep reflection seismic profiling

10:50 - 11:15 **M. Cyz, M. Malinowski, T. Linqvist, E. Virta, S. Heinonen, T. Arola, J. Riissanen, S. Mustonen, J. Hietava and P. Skyttä**

Seismic recognition of the faults for geothermal exploration in crystalline rocks: results from the pilot survey in Helsinki

11:15 - 11:40 **J.D. Solano-Acosta, A. Soesoo and R. Hints**

New insights of the crustal structure across Estonia using satellite potential fields derived from WGM-2012 gravity data and EMAG2v3 magnetic data

11:40 - 12:05 **M. Nousiainen, S. Heinonen and T. Karinen**

Petrophysics of the Koillismaa drill hole

### 12:05 - 13:00 Lunch

### 13:00 - 15:10 Session 2: Earth Resources and sustainability

*Chair: Esa Heilimo*

13:00 - 13:25 **A. Soesoo**

Critical Earth Resources: an Estonian Contribution

13:25 - 13:50 **A. Bischoff, J. Kuva, M. J. Heap, E. Jolis, T. Reuschlé, J. Engström, J. Salminen and T. Karinen**

Chasing Deep Geothermal Resources in Crystalline Cratons

13:50 - 14:15 **K. Piipponen and A. Martinkauppi**

A thermogeological analysis of medium-deep borehole heat exchangers in low-enthalpy crystalline rocks

### 14:15 - 14:45 Coffee/Tea

- 14:45 - 15:10 **P. Eilu**  
Critical mineral raw material potential in the Nordic countries
- 15:10 - 16:50 Session 3: Lithosphere evolution and structures**  
*Chair: Fredrik Karell*
- 15:10 - 15:35 **A. Amer**  
Offshore Cyrenaica New Bathymetry Using World War II Data, Implications on the Central Mediterranean Plate Boundaries
- 15:35 - 16:00 **J. Kohonen, J. Jäsberg, J. Laitala and J. Luukas**  
Basement tectonics along the margins of the Jormua-Outokumpu suture zone
- 16:00 - 16:25 **J. Engström, N. Ovaskainen, M. Markovaara-Koivisto and N. Nordbäck**  
Integrated lineament interpretation
- 16:25 - 16:50 **N. Ovaskainen, N. Nordbäck and P. Skyttä**  
Brittle structural characterization of the Åland rapakivi
- 17:00 - 20:00 Session 4: Posters and networking with refreshments (Ice breaker), including short posters introductions**  
*Chair: Esa Heilimo*

## POSTERS

- P1. K. Ahlqvist, N. Anttila, P. Skyttä and A. Ojala**  
3D bedrock topography model of City of Turku using geotechnical soundings
- P2. K. Cutts, P. Hölttä and R. Lahtinen**  
Paleoproterozoic metamorphism of Peräpohja and Kuusamo Belts: a combined U-Pb monazite, apatite and garnet study
- P3. T. Gråsten, E. Heilimo and T. Halkoaho**  
Nickel remobilisation in Sika-aho, Kuhmo greenstone belt
- P4. P. Haapanala, A. Korja and FIN-EPOS community**  
Solid Earth Science RI collaboration in Finland
- P5. M. Holma, J. Korteniemi, G. Casini, E. Saura, F. Šumanovac, J. Kapuralić and F. Tornos**  
Agile Exploration and Geo-modelling for European Critical Raw Materials – Introduction to the AGEMERA project
- P6. H. Höytiä, P. Peltonen, P. Lamberg and T. Halkoaho**  
Lithochemical approach to constrain Ni-Cu-PGE fertility of Paleoproterozoic ultramafic rocks in Northern Fennoscandia
- P7. S.R. Islam, E. Heilimo and K. Cutts**  
Determining the age and metamorphic evolution of the Pyhäsalmi region, Central Finland: relationship between metamorphism, ore genesis and evolution
- P8. P. Jänkäväära, J. Konnuaho and E. Heilimo**  
Petrographic and micro-XRF studies of Co-Cu mineralized Tanhua mafic intrusion
- P9. N. Junno, L. Fülöp, K. Oinonen, P. Mäntyniemi, A. Korja and SEISMIC RISK working group**  
SEISMIC RISK – Mitigation of induced seismic risk in urban environment
- P10. J. Kara, M. Väisänen and H. O'Brien**  
Zircon U-Pb age of the Haveri basalt and felsic dyke

- P11. T. Kauti, P. Skyttä and E. Heilimo**  
Structural evolution of the Archaean Siilinjärvi carbonatite complex
- P12. L. Kotomaa, M. Väisänen, E. Mäkilä, H. O'Brien and P. Kokko**  
Lieksa-4: a P-rich iron meteorite from Lieksa
- P13. V. Laakso, S. Heinonen, E. Koskela and M. Malinowski**  
Reflection seismic profiling in the Kevitsa Ni-Cu-PGE mining area for mineral exploration
- P14. N. Lindén, A. Saukko, M. Kurhila and O. Eklund**  
Sm-Nd and Lu-Hf isotopes in the Svecofennian rocks of southernmost Finland
- P15. T. Lindqvist, E. Ruuska, E. Kosonen, N. Hornborg, P. Skyttä and N. Putkinen**  
Integrated modelling of bedrock surface and bedrock deformation zones for induced seismic risk assessments – improved constraints for thickness of sedimentary cover
- P16. T. Luhta and J. Hällsten**  
Åland seismic network
- P17. M. Malinowski, B. Brodic, I. Martinkauppi, E. Koskela and V. Laakso**  
Distributed acoustic sensing walkaway vertical seismic profiling in Koillismaa deep drillhole
- P18. M. Rydberg, M. Kurhila and K. Nikkilä**  
Classification of mafic dikes in the Hanko-Inkoo archipelago
- P19. A. Savakko, P. Mikkola and E. Heilimo**  
Geochemical features of the felsic and intermediate igneous rocks in Pasalanmäki area in Archean Proterozoic boundary
- P20. L. Tuikka, B. Cateland, D. M. Whipp and M. Häkkinen**  
Exploring the effects of continental collision obliquity and temperature on orogeny evolution and P-T-t paths
- P21. M. Tuppurainen, P. Mikkola and M. Kurhila**  
New U-Pb Age Data from Pasalanmäki In Leppävirta, Central Finland – Older Svecofennian Magmatism Or Not?
- P22. E. Virta, T. Lindqvist, P. Skyttä and S. Mustonen**  
Correlation of bedrock outcrop structures with subsurface data – with emphasis on the need of geoenergy research
- P23. D. Whipp and D. Kellett**  
Quantifying crustal evolution using low-temperature thermochronology and numerical modelling

## Wednesday, Nov 16

- 09:00 - 10:35**     **Session 5: Crustal structures and mineral resources**  
*Chair: Ilmo Kukkonen*
- 09:00 - 09:45     **A. Rotevatn [Keynote]**  
Hard breakup - the rifted margin of western Fennoscandia
- 09:45 - 10:10     **S. Géhin and A. J. Miles**  
Mineralogical and geochemical characteristics of the red 'Rektor Porphyry' associated with the Per Geijer AIO ore, Northern Sweden
- 10:10 - 10:35     **P. Lupoli, L. Lobo, O. Katai, R. Prata, C. Santana, L. Gerlach, C. Benedicto, S. Johansson, M.-L. Friedländer, M. Martins and P. Biedzio**

Proximal hydrothermal alteration assemblages in the Kiruna deposit – a preliminary petrographic study

- 10:35 - 11:00**    **Coffee/Tea**
- 11:00 - 12:05**    **Session 6: Archaean and Proterozoic lithosphere evolution**  
*Chair: Kaisa Nikkilä*
- 11:00 - 11:25    **J. Kara, M. Väisänen, J.S. Heinonen and H. O'Brien**  
Arclogite formation beneath the Svecofennian orogen
- 11:25 - 11:50    **A.E. Johnson and O. Eklund**  
Intraorogenic mafic magmatism in Nagu, SW Finland
- 11:50 - 12:05    **M. Seitsamo-Ryynänen and M. Kotilainen**  
Plans and Actions with FIN-GEO
- 12:05 - 13:45**    **Lunch, poster viewing and FIN-GEO open discussion**
- 13:45 - 17:10**    **Session 7: Archaean and Proterozoic lithosphere evolution (cont.)**  
*Chair: Suvi Heinonen*
- 13:45 - 14:10    **P. Mikkola, J. Jäsberg, J. Luukas and M. Kurhila**  
Lithological units and geological evolution of Outokumpu allochthon's western parts, update based on recent studies
- 14:10 - 14:35    **O. Teräs, K. Nikkilä and O. Eklund**  
Relation between rare element pegmatites and post-collisional magmatism in the Svecofennian domain
- 14:35 - 15:00    **A. Saukko, K. Nikkilä, S. Fröjdö, O. Eklund and M. Väisänen**  
Magmas, metasomatism, and melting – the Svecofennian orogeny in southernmost Finland
- 15:00 - 15:30**    **Coffee/Tea**
- 15:30 - 15:55    **P. Skyttä, E. Ruuska, T. Lindqvist and K. Ahlqvist**  
Fracture-controlled glacial erosion - using outcrops analogues to model the erosional signature of unexposed faults
- 15:55 - 16:20    **T. Luoto, J. Salminen, S. Mertanen, S.-Å. Elming and L. J. Pesonen**  
New reliable ~1885 Ma paleomagnetic pole from Svecofennian gabbro intrusions, central Finland
- 16:20 - 17:10    **I.T. Kukkonen [Invited]**  
Evolution, structure and fluids of lithosphere in Finland
- 17:10 - 17:20    **National Lithosphere Committee**  
Honouring Ilmo Kukkonen for his work in lithospheric research
- 19:00 -**        **Conference Dinner, Café Pegasus, Aboa Vetus & Ars Nova**

## Thursday, Nov 17

### 9:30 - 10:30 **Session 8: Crustal structures and mineral resources (cont. from Session 5)**

*Chair: Olav Eklund*

9:30 - 10:05 **J. Kamm [invited]**

Studying the crust and its mineral systems with deep electromagnetic induction

10:05 - 10:30

**S. Aatos**

Constraining serpentinite-related pseudo-lithological entities in western boundaries of Outokumpu allochthon

**10:30 - 11:00 Coffee/Tea**

### 11:00 - 14:10 **Session 9: Short communications and project presentations**

*Chair: Toni Veikkolainen*

11:00 - 11:15

**E. Salin**

Lunar regolith as an archive of Solar System history

11:15 - 11:30

**I. Aaltonen, H. Reijonen and T. Bornhorst**

Michigan International Copper Analogue (MICA) project

11:30 - 11:45

**S. Heinonen, J. Kamm, M. Malinowski and the SEEMS DEEP Working Group**

SEEMS DEEP – combining seismic and electromagnetic methods for deep bedrock imaging

11:45 - 12:00

**K. Loukola-Ruskeeniemi, E. Hyvönen, J. Lerssi, H. Arkimaa, M.-L. Airo, J. Vanne, S. Vuoriainen, R. Turunen and J. Eskelinen**

The Black Shale Database of Finland: Precambrian metasedimentary rocks rich in graphite and sulphides

### 12:00 - 13:00 **Lunch**

13:00 - 13:15

**A. Korja and P. Haapanala**

Introduction to EPOS outreach videos

13:15 - 13:30

**I. Kukkonen, G. Hillers, P. Haapanala and the FLEX-EPOS team**

Finnish Seismic Instrument Pool

13:30 - 13:45

**S. Yang, E. Kozlovskaya and SEMACRET consortium**

Introduction to project SEMACRET: Sustainable exploration for orthomagmatic (critical) raw materials in the EU: Charting the road to the green energy transition

13:45-14:00

**D. Whipp and K. Cutts**

Tektonika: A new diamond open-access journal for the structural geology and tectonics community

**14:00-14:30**

**Poster Award; Forthcoming Meetings; Closing of Symposium**

*Chair: Pietari Skyttä*