Curriculum vitae with publication lists

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BIOGRAPHIC SUMMARY

With specialisation in geochemistry, mineralogy and petrology, I am studying Earth and planetary formation, evolution and dynamics. Educated at the Norwegian Institute of Technology and University of Western Ontario, my research background includes field-based and high-pressure experimental investigations of petrological, mineralogical and geochemical nature. I am currently leading the group for Deep Earth materials and dynamics at the Centre for Earth Evolution and Dynamics (CEED, a CoE funded mainly by the Research Council of Norway). We use first principles atomistic simulations to interrogate Earth and planetary materials. I have been engaged in a wide range of research and geoscience education in Norway, Canada and Iceland, with additional short-term high-pressure experimentation in Germany, UK and Japan.

UNIVERSITY EDUCATION

1981-85: ***Doctor of Philosophy*** *(Geology, Experimental Petrology)*, University of Western Ontario.
1974-78: ***Sivilingeniør*** *(Geology)*, Norwegian Institute of Technology, University of Trondheim.

RESEARCH AND TEACHING EXPERIENCE

2009– : ***Professor,*** Natural History Museum, University of Oslo. Also at the Centre for Earth Evolution and Dynamics (CEED) from 2013.
2013– : ***Group leader***, Deep Earth Materials and Dynamics, CEED, University of Oslo
2011: ***Research Fellow,*** Centre for Advanced Studies, Norwegian Academy of Science and Letters, Oslo
2010: ***Professor,*** Norwegian University of Science and Technology, Trondheim
2000–04: ***Nordic research scientist,*** Nordic Volcanological Institute, University of Iceland
1994–2009: ***Associate professor,*** Natural History Museum, University of Oslo
(until 2000: Mineralogical-Geological Museum, University of Oslo)
1992–94: ***Research Scientist,*** Mineral Resources Group, Geological Survey of Norway.
1990–92: ***Research Associate / Research Facility Manager,*** Department of Geology, University of Alberta.
1988–90: ***Visiting Assistant Professor***, Department of Geology, University of Alberta, (Acting director of C.M. Scarfe Laboratory of Experimental Petrology, 1988-1989).
1986–88: ***Research Scientist***, Industrial Mineral Section, Geological Survey of Norway.
1985–86: ***Postdoctoral Fellow***, Nordic Volcanological Institute, University of Iceland.
1981–85: ***Royal Norwegian Council for Scientific and Industrial Research Predoctoral Fellow*** and ***University of Western Ontario Teaching Assistant***
1979–81: ***Research and Teaching Assistant*** *(economic geology)*, Norwegian Institute of Technology.

RECENT PUBLICATIONS

REFEREED ARTICLES

Shephard GE, Houser C, Hernlund JW, Valencia-Cardona JJ, Trønnes RG, Wentzcovitch RM, 2021: Seismological expression of the iron spin crossover in ferropericlase in the Earth's lower mantle. Nat. Comm. 12, 5905.

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Tan P, Breivik AJ, Trønnes RG, Mjelde R, Azuma, R, Eide S 2017: Crustal structure and origin of the Eggvin Bank west of Jan Mayen, NE Atlantic. J. Geophys. Res. 122, 43-62.

Shepard GE, Trønnes RG, Spakman W, Panet I, Gaina C 2016: Evidence for slab material under Greenland and links to Cretaceous High Arctic magmatism. Geophys. Res. Lett. 43, 3717-3726.

Torsvik TH, Steinberger B, Ashwal LD, Doubrovine PV, Trønnes RG 2016: Earth Evolution and Dynamics – A tribute to Kevin Burke. Can. J. Earth Sci. 53, 1073-1087.

Mohn CE, Trønnes RG 2016: Iron spin state and site distribution in $FeAlO_3$-bearing bridgmanite. Earth Planet. Sci. Lett. 440, 178-186.

Torsvik TH, Amundsen HEF, Trønnes RG, Doubrovine PV, Gaina C, Kusznir NJ, Steinberger B, Corfu F, Ashwal LD, Griffin WL, Werner SC, Jamtveit B 2015: Continental crust beneath southeast Iceland. Proc. Nat. Acad. Sci. 10.1073/pnas.1423099112, E1818–E1827.

Andrault D, Trønnes RG, Konopkova Z, Morgenroth W, Liermann HP, Morard G, Mezouar M, 2014: Phase diagram and P-V-T equation of state of Al-bearing seifertite at lowermost mantle conditions. Am. Mineral. 99, 2035-2042.

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Trønnes, R.G. 2002: Stability range and decomposition of potassic richterite and phlogopite end members at 5–15 GPa. *Mineralogy and Petrology* 74, 129-148 (Edgar Memorial Issue).

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Shephard GE, Houser C, Hernlund J, Wentzcovitch R, Trønnes R, 2019. Seismic detection of iron spin pairing in ferropericlase and the structure of the lower mantle. Ada Lovelace Workshop on Modelling Mantle and Lithosphere Dynamics. Abstr. 19.

Shephard GE, Houser C, Hernlund J, Wentzcovitch R, Trønnes R, 2019: Detection of the lower mantle iron spin transition in ferropericlase through vote maps of seismic tomography. European Geosci. Union, Gen. Assembly, Geophys. Res. Abstr. EGU2019-6998.

Brydon RJ, McLeod C, Shaulis B, Haley MY, Trønnes RG 2018: Accessory phases as tracers of magmatic processes in plutonic environments: insights from apatite. Geol. Soc. Am. Ann. Mtg., Abstr. 233-7

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Heyn B, Conrad CP, Trønnes, RG, 2017. Stabilizing effect of a chemical viscosity contrast on LLSVP structures Abstr., Gordon Res. Conf. on Chemical and dynamical evolution of Earth's deep interior, from formation to today. Mount Holyoke College, South Hadley, MA.

Baron MA, Walter MJ, Siebert J, Badro J, Drewitt JWE, Lord OT, Louvel M, Lyubomirskiy M, Trønnes RG, 2017: Magma ocean thermometry, using metal-silicate partitioning of germanium. ACCRETE Workshop on Accretion and Early Differentiation of the Earth and Terrestrial Planets. Nice May 29 - June 3.

Trønnes RG, Eigenmann KR, Mohn CE, 2017: The origin of deep Earth reservoirs with "primordial" He and Ne isotope ratios. Fifth ELSI International Symposium. Tokyo Inst. Tech., Ookayama. Abstr. S4-P17, 41.

Mohn CE, Trønnes RG, 2016: Element partitioning, iron spin state and local structural order in bridgmanite and post-bridgmanite: An ab initio Monte Carlo study. Trans. Am. Geophys. Union, Fall Meeting, MR13A-2417.

Baron MA, Lord OT, Drewitt JWE, Badro J, Walter MJ & Trønnes RG, 2016: Melting of peridotite at lower mantle conditions: LH-DAD experiments with metal encapsulated samples. Goldschmidt Conf. Abstr., 163

OTHER ARTICLES AND TECHNICAL REPORTS (mostly internal review, partly external review)

Savchuck O, Trønnes RG, Frost DJ 2013: Liquidus phase relations in the system MgO-SiO2. Annual Report 2012, Bayerisches Geoinstitut, 4.2.d (Geochemistry), 57-59

Savchuck O, Frost DJ, Trønnes RG 2012: The effect of chemistry on the melting of pyroxenite rocks in simplified systems at 6 GPa. Annual Report 2011, Bayerisches Geoinstitut, 3.2.f (Geochemistry and Cosmochemistry), 60-61.

Trønnes RG, Frost DJ 2012: Liquidus phase relations in the systems $AlO_{1.5}$-MgO-SiO_2, CaO-MgO-SiO_2, FeO-MgO-SiO_2 at 17-24 GPa. Annual Report 2011, Bayerisches Geoinstitut, 3.2.e (Geochemistry and Cosmochemistry), 57-60.

Savchuck O, Frost DJ, Trønnes RG 2012: The effect of chemistry on the melting of pyroxenite rocks in simplified systems at 6 GPa. Annual Report 2011, Bayerisches Geoinstitut, 3.2.f (Geochemistry and Cosmochemistry), 60-61.

Boffa-Ballaran T., Trønnes R.G., Frost D.J. 2008: High-pressure behaviour of $CaIrO_3$ perovskite and post-perovskite phases. Ann. Rep. 2007, Bayerisches Forschungsinstitut f. Experimentelle Geochemie u. Geophysik, 3.3.e (Mineralogy, Crystal Chemistry and Phase Transitions).

Trønnes R.G., Frost D.J., Boffa-Ballaran T., Stølen S. 2007: The perovskite to post-perovskite transition in $CaIrO_3$. Ann. Rep. 2006, Bayerisches Forschungsinstitut f. Experimentelle Geochemie u. Geophysik, 3.3.d (Mineralogy, Crystal Chemistry and Phase Transitions).

Liebske, C. Frost, D.J., Rubie, D.C., Trønnes, R.G. 2003: Melting of Mg2SiO4 between 10-24 GPa. Ann. Rep. 2002, Bayerisches Forschungsinstitut f. Experimentelle Geochemie u. Geophysik, 3.3.g. (Mineralogy, Crystal Chemistry and Phase Transitions).

Frost, D.J., Trønnes, R.G. 2000: Melting relations and trace element partitioning in peridotite at 20-26 GPa - effects of variable H2O and O2 fugacities. Ann. Rep. 1999, Bayerisches Forschungsinstitut f. Experimentelle Geochemie u. Geophysik, 3.3.g. (Mineralogy, Crystal Chemistry and Phase Transitions).

Frost, D.J, McCammon, C.A. and Trønnes, R.G. 2001: Melting phase relations of mantle peridotite between 21 and 24 GPa. Ann. Rep. 2000, Bayerisches Forschungsinstitut f. Experimentelle Geochemie u. Geophysik, 3.3k. (Mineralogy, Crystal Chemistry and Phase Transitions).

Trønnes, R.G. 1994a: Marmorforekomster i Midt-Norge: Geologi, isotopgeokjemi og industrimineralpotensiale. *Norges geol. unders. Rappor*. 94.042.

Trønnes, R.G. 1994b: Kjemisk og mineralogisk variasjon langs marmorsonen fra Huddingsvatnet til Leipikdalen, Grongfeltet, Nord-Trøndelag. *Norges geol. unders. Rapport 94.008.*

Trønnes, R.G. 1993a: Struktur, mineralogi og kjemi av kalkspatmarmor på Ytterøya, Nord-Trøndelag. *Norges geol. unders. Rapport 93.146.*

Trønnes, R.G. 1993b: Structure, mineralogy, chemistry and economic potential of calcitic marble i the Geitfjellet–Bukkafjellet area, Nord-Trøndelag. *Norges geol. unders. Rapport 93.043*

Trønnes, R.G. 1988: Kjerneboring langs østgrensen av Raudbergmassivet. *Norges geol. unders. Rapport 88.027.*

Trønnes, R. & Erichsen, E. 1988: Forprosjekt for undersøkelse av eklogitter i Sogn og Fjordane. *Norges geol. unders. Rapport 88.066.*

Trønnes, R. 1988: Rekognoserende kartlegging av den vestlige delen av Dalsfjelletmassivet, Gulen, Sogn og Fjordane. *Norges geol. unders. Rapport 88.065.*

Trønnes, R. 1981: Rekognoserende kartlegging av syenittområder innen det sørlige Larvikittmassivet i Oslofeltet. *Norges geol. unders. Rapport 1850/77B.*

Trønnes, R. 1981: Intrusivkomplekset på Tjøme - et område med sterkt differensierte peralkaline bergarter, Oslofeltet, Tjøme, Vestfold. *Norges geol. unders. Rapport 1800/77A.*

Trønnes, R. 1980: Bergartstyper, intrusjonsforhold og hydrotermale omvandlinger og mineraliseringer, Røysjø-området, Drammensgranitten.. *Rapport til Prospekteringsavdelingen, Norsk Hydro A/S.*

Trønnes, R. 1980: Magmatic evolution, hydrothermal alterations and mineralizations of the Rustad - Øyangen Igneous Rock Complex, Oslo Rift. *Rapport til Prospekteringsavdelingen, Norsk Hydro A/S.*

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CONTRIBUTIONS TO BEDROCK GEOLOGICAL MAPS PUBLISHED BY GEOL. SURVEY NORWAY

Bedrock map of Norway, 1:1 million (compiled by Sigmond, E.M.O., Gustavson, M., Roberts, D., 1984)

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EXCURSION GUIDES

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