Curriculum vitae with track record: Ole Martin Løvvik

ROLE IN THE PROJECT

Project manager ☒ Project partner ☐

PERSONAL INFORMATION

Family name, first name:	Løvvik, Ole Martin
Date of birth:	09. April 1968
Gender:	Male
Nationality:	Norwegian
Personal web site:	http://www.mn.uio.no/fysikk/english/people/aca/olem/index.html
Researcher unique identifiers:	ORCID iD: https://orcid.org/0000-0002-4169-1544, Scopus ID: 6602470195, ResearcherID: F-1476-2019

EDUCATION

1998	Dr.scient., Dept. of Physics, Univ. of Oslo (UiO), Norway, 12.06.1998
1992	Cand.Scient., Dept. of Physics, UiO, Norway, 20.12.1992.

CURRENT AND PREVIOUS POSITIONS

2012–	Adjunct Professor, Dept. of Physics, UiO, Norway. (Present)
2008–	Chief Scientist, SINTEF Materials Physics, Oslo, Norway. (Present)
2006	Consultant, Research Council of Norway (4 months).
2002–2008	Post doc., research fellow, Institute for Energy Technology, Kjeller, Norway.
2001–2002	Associate Professor, Norwegian Univ. of Life Sciences, Ås, Norway (6 months).
1999–2011	Post doc., research fellow, university lecturer, associate professor, Dept. of Physics, UiO.

FELLOWSHIPS, AWARDS AND PRIZES

2015–2016	Scholarship from the Fulbright program, USA/Norway.
2012	Award as Visiting professor, Osaka University, Japan.
1999–2001	Personal postdoctoral fellowship received from the Research Council of Norway
1993–1998	Personal PhD scholarship awarded, Norwegian Research Council for Science&Humanities

MOBILITY

2015–2016	Visiting associate, California Institute of Technology, Pasadena, USA (1 year).
2012	Visiting professor, Dept. Theoretical Nanotechnology, Osaka University, Japan (1 month).
2008	Visiting scientist, Univ. of Hiroshima, Japan (1 month).

SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

2002–	Graduated to date: 8 PhD and 11 MSc students. Currently supervising 1 Postdoc, 4 PhD and 2 MSc students. UiO, NTNU, Univ. Southeast Norway, Leiden Univ., Univ. Milano.

TEACHING ACTIVITIES

2010–	Co-responsible: FYS-MENA4111, Quantum Mechanic Modelling of Nanomaterials, UiO.
2007–2010	Co-developed and co-responsible: FYS-MENA4110, Quantum Nano Physics, UiO.
2002	Co-developed and co-responsible: FYS310, Computational Physics 3, UiO.
2001	Responsible: TFY114, Thermodynamics, the Norwegian University of Life Science, Ås.

RECENT ORGANISATION OF SCIENTIFIC MEETINGS

2021	Member of International Advisory Board, CIMTEC 2021, 9th Forum on New Materials, Montecatini Terme, Italy, June 2021.

2019 Member of the Local organization committee of the Fysikermøtet (semi-annual conference of the Norwegian Physical Society), Oslo, Norway, August 2019.

2019 Chairman of the 2nd International Conference on the Conversion between Magnetic, Electric and Thermal Energies, Oslo, Norway, June 2019.

2018 Co-organizer of the 1st International Conference on the Conversion between Magnetic, Electric and Thermal Energies, Minneapolis, USA, Apr. 2018.

2017 Co-chair of Wide bandgap semiconductor for LEDs, solar and related energy technology at the European Materials Research Society spring meeting, Strasbourg, France, May 2017.

2016 Chairman of the international workshop Thermoelectrics–from fundamentals to applications, Hurtigruten, Norway, Sept. 2016.

2015 Chairman of the international workshop New Applications of Cubic Silicon Carbide, Oslo, June 2015.

2015 Member of scientific committee, Synknøyt user meeting, Sola, Norway, Jan. 2015.

INSTITUTIONAL RESPONSIBILITIES

1991– Member of numerous boards, councils, committees, etc. at UiO and SINTEF.

SELECTED RECENT PROJECT MANAGEMENT EXPERIENCE

2018–2021 Project leader: Premeum – Predictive metallurgy using millions of atoms. Funded by Norsk Hydro's Fond. Budget: 2.7 MNOK

2018–2021 Project leader at SINTEF: 3D-TEM, Three-dimensional thermoelectric modules. Funded by the Research Council of Norway (RCN), EnergiX and TEGma AS. Budget: 9.9 MNOK

2017–2020 Project leader: Comet - Conversion between Magnetic, Electric, and Thermal energies in phase-transforming materials. Funded by RCN, Frinatek. Budget: 10 MNOK

2018–2019 Project leader: Malerne – Machine learning for research on novel energy materials. Strategic SINTEF project. Budget: 1.5 MNOK.

2017–2019 Project leader at SINTEF: TESil – Thermoelectric Silicides. Funded by the RCN, EnergiX and by Elkem AS. Budget: 12.5 MNOK

2014–2017 Project leader: SunSiC – Efficient exploitation of the sun with intermediate band gap in silicon carbide. Funded by RCN, EnergiX. Budget: 7 MNOK.

2014–2017 WP leader: HIPP – Hydrogen-induced degradation of offshore steels in ageing infrastructure, models for prevention and prediction. Funded by the RCN, Petromaks. Budget: 19 MNOK.

2014–2017 Project leader at SINTEF: Thermomat – High temperature thermoelectric materials. Funded by TEGMA AS and RCN, EnergiX. Budget: 18 MNOK.

2013–2015 Project leader: Tosca – Implementation of a commercial medical detector for synchrotron based Total Scattering experiments. Funded by the RCN, Synknøyt. Budget: 3 MNOK.

2011–2015 Project leader: NanoThermo – Nanostructured materials for thermoelectric conversion of waste heat into electricity. Funded by RCN, Renergi. Budget: 14 MNOK.

2009–2013 WP leader: Hipersol – Modelling of interfaces for high performance solar cell materials, funded by EU FP7, NMP. Budget: 4 M€.

COMMISSIONS OF TRUST

1997– Referee for >20 journals, e.g. Nature Mater., Nature Commun., Phys. Rev. Lett., Appl. Phys. Lett.

2000– Opponent at several dissertations in Norway, Sweden, and the Netherlands

2004– Member of several appointment committees for scientific positions in Norway, Denmark, and USA.

2004– Evaluator for various research applications in Research Councils and other funding bodies in Norway, Sweden, the Netherlands, Japan, and USA.

2016– Associate editor of Energy Harvesting and Systems (de Gruyter)

2008–2010 Norwegian expert, European Science Foundation's COST action, Domain of Materials, Physics, and Nanoscience.

MEMBERSHIPS OF ACADEMIES / SCIENTIFIC SOCIETIES

2011– Member of the International Thermoelectric Society, European Thermoelectric Society.

2017–2018 Deputy member of the board, Quantum Chemistry group, Norwegian Chemical Society.

2006–2017 Member and deputy member of the board, Norwegian Physical Society.

2006–2009 Head of Condensed Matter Physics group, Norwegian Physical Society.

RECENT MAJOR COLLABORATIONS (WITH JOINT PUBLICATIONS)

National: SINTEF, Universitetet i Oslo, NTNU, Univ. Sørøst-Norge.

International: Caltech, Univ. Milano, ESRF Grenoble, Univ. Rouen, Techn. Univ. Delft, Univ. Vienna, Leiden Univ., SuperSTEM Lab Daresbury, Univ. Linköping, Univ. Erlangen, Univ. Oxford.

CAREER BREAKS

1997, 2000, 2004: Parental leaves, together 14 months.

Jul. 1998–Aug. 1999: Civil service as musician, together 14 months.

Jan. 1994–Aug. 1996: Freelance musician, several tours, together 6 months.

Track record

TOTAL NUMBER OF PUBLICATIONS

- ISI Web of Knowledge: **117** papers, h-index **28**, **2716** citations (without self-citations).
- Google Scholar: **158** publications, h-index **31**, **3882** citations, i10-index **75**.
- Contributions to **140** presentations at international conferences; **24** of these were invited talks.
- **>170** other presentations; **>100** interviews and performances in TV, radio, newspapers, etc.

10 SELECTED PUBLICATIONS SINCE 2011

116. K. Berland, N. Shulumba, O. Hellman, C. Persson, **O. M. Løvvik**, *Thermoelectric transport trends in group 4 half-Heusler alloys*, J. Appl. Phys., **126** (2019) 145102.
109. H. Zhang, K. Hippalgaonkar, T. Buonassisi, **O. M. Løvvik**, E. Sagvolden, D. Ding, *Machine Learning for Novel Thermal-Materials Discovery: Early Successes, Opportunities, and Challenges*, ES Energy Environ. **2** (2019) 1–8.
107. M. V. Tabib, **O. M. Løvvik**, K. Johannesen, A. Rasheed, E. Sagvolden, A. M. Rustad, *Discovering Thermoelectric Materials Using Machine Learning: Insights and Challenges*, Lecture Notes in Computer Science **11139** (2018) 392-401.
101. **O. M. Løvvik**, K. Berland, *Predicting the thermoelectric figure-of-merit from first principles,* Materials Today: Proceedings 5 (2018) 10227–10234.
92. S. N. H. Eliassen, A. Katre, G. K. H. Madsen, C. Persson, **O. M. Løvvik**, K. Berland, *Lattice thermal conductivity of Ti xZr yHf 1-x-yNiSn half-Heusler alloys calculated from first principles: Key role of nature of phonon modes*, Phys. Rev. B **95** (2017) 045202.
85. K. Berland, X. Song, P. A. Carvalho, C. Persson, T. Finstad, **O. M. Løvvik**, *Enhancement of thermoelectric properties by energy filtering: Theoretical potential and experimental reality in nanostructured ZnSb*, J. Appl. Phys. **119** (2016) 125103.
79. X. Song, K. Valset, J. S. Graff, A. Thøgersen, A. E. Gunnæs, S. Luxsacumar, **O. M. Løvvik**, G. J. Snyder, T. G. Finstad, *Nanostructuring of Undoped ZnSb by Cryo-Milling*, J. Electr. Mater. **44** (2015) 2578-2584.
67. T. A. Tollefsen, **O. M. Løvvik**, K. Aasmundtveit, A. Larsson, *Effect of temperature on the die shear strength of a Au-Sn SLID bond*, Metall. Mater. Trans. **44A** (2013) 2914-2916.

62. S. Casolo, **O. M. Løvvik**, H. Fjeld, T. Norby, *Theoretical analysis of oxygen vacancies in layered sodium cobaltate* $Na_xCoO_{2-\delta}$, J. Phys.: Condens. Matter **24** (2012) 475505.
55. P. Rauwel, **O. M. Løvvik**, E. Rauwel, E. S. Toberer, G. J. Snyder, J. Taftø, *Nanostructuring in β-*Zn_4Sb_3 *with variable starting Zn compositions*, Phys. Stat. Solid. A **7** (2011) 1652–1657 (Featured on the front page of the issue and chosen among the "best of pss 2011").

BOOK CHAPTERS SINCE 2011

- F. Remonato, **O. M. Løvvik**, E. Flage-Larsen, *Effectiveness of Neural Networks for Research on Novel Thermoelectric Materials. A Proof of Concept*, in Bach K., Ruocco M. (eds) Nordic Artificial Intelligence Research and Development. NAIS 2019. Commun. Computer Information Science, vol 1056. Springer, Cham (2019).
- E. Flage-Larsen, **O. M. Løvvik**, *Band structure guidelines for higher figure-of-merit; analytic band generation and energy filtering*, in Thermoelectrics and its Energy Harvesting, Edited by D. M. Rowe, (2012).

10 SELECTED INVITED TALKS SINCE 2011

- O. M. Løvvik et al., *Screening thermoelectric materials with ab initio atomistic modelling and machine learning techniques*, Invited Talk at the 17th European Conference on Thermoelectricity, Limassol, Cyprus, 23-25.09.2019.
- O. M. Løvvik, N. Pike, M. Løberg, M. Stange, M. Sunding, A. Gunnæs, *High-throughput search for new phase transformation materials with low hysteresis*, Invited Talk at the Optimal design of complex materials workshop, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, 15.01.2019.
- K. Berland, N. Shulumba, O. Hellman, A. Minnich, C. Persson, O. M. Løvvik, *Predicted figure-of-merit of half-Heusler alloys - importance of scattering mechanisms*, Invited Talk at the 36th International Conference of Thermoelectrics, ICT2017, Pasadena, USA, 30.07.2017.
- O. M. Løvvik, N. Shulumba, O. Hellman, *Thermal conductivity from the temperature dependent effective potential (TDEP) method*, Invited Talk at the Second Chalmers symposium on Nanoscale Thermal Transport, Gothenburg, Sweden, 07.10.2016.
- O. M. Løvvik, S. Eliassen, K. Berland, X. Song, M. Schrade, N. Shulumba, O. Hellman, A. Katre, G. Madsen, *Predicting the thermoelectric figure of merit from first principles*, Invited Talk at the 14th European Conference of Thermoelectrics, ECT2016, Lisbon, Portugal, 23.09.2016.
- O. M. Løvvik, S. N. H. Eliassen, K. Berland, E. Flage-Larsen, I. T. Jensen, T. Peters, P. A. Carvalho, *Transport Properties of Materials from First Principles*, Invited talk at the Caltech Materials Research Lectures, Pasadena, USA, 02.12.2015.
- O. M. Løvvik, X. Song, K. Valset, E. Flage-Larsen, H. Fjeld, J. Seland Graff, M. Schrade, O. B. Karlsen, A. Larsson, S. Casolo, Ø. Prytz, T. Norby, T. Finstad, A. Gunnæs, J. Taftø, *Thermoelectric materials from first principles to final applications: Basic and applied thermoelectrics in Oslo*, Invited talk at the DLR Thermoelectric Colloquium, Köln, Germany, 08.05.2014.
- O. M. Løvvik, Kianoosh Hadidi, *Modeling of interfaces for energy technology: Solid oxide fuel cells and solar cells as case studies*, Invited talk at the Computation Materials Design Workshop, Kyoto, Japan, 07.03.2012.
- O. M. Løvvik, *DFT calculations of solubility and diffusivity in the Zn-Sb system*, Invited talk at the International Workshop on Promotion of Nanoscience and Nanotechnology Research, Osaka, Japan, 27.01.2011.
- O. M. Løvvik, E. Flage-Larsen, E. Sagvolden, J. Friis, *Solar Cell Technology and Hydrogen Storage Materials: From First Principles Calculations to Real World Applications*, Invited talk at the 14th SANKEN international Symposium, Otsu, Japan, 26.01.2011.

PATENT SINCE 2011

Method for pre-processing semiconducting thermoelectric materials for metallization, interconnection and bonding, Torleif A. Tollefsen, Marianne Aanvik Engvoll, Ole Martin Løvvik, Andreas Larsson, US Pat. 2018 / 0323358 A1.