

Name Frode Strisland, Dr. ing.

Current positions: **Senior Scientist**
Health Research Department
SINTEF Digital

Associate Professor II
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Date of Birth: 20th of Oct 1969

Employed since: 1998 (SINTEF)
2015 (University of Oslo)

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KEY QUALIFICATIONS

25 years of SINTEF experience in contract research and collaborative projects on national and international level. I have been in charge of complex research, development and innovation projects covering all the range from user needs, specifications, design, and realization to final verification and validation of medical devices, mainly related to point-of-care applications, such as ambulatory wearable physiological sensors and lab-on-a-chip instrumentation. As a Senior Scientist, I am also responsible for generating, carrying out and manage research projects involving others and myself. Predominantly, I have held project management positions in projects, but combined this with scientific work.

As Associate Professor II at the Physics Institute at the University of Oslo, I have since 2015 been teaching the course *FYS3260/FYS4260 Microsystems and electronic packaging*.

EMPLOYMENT RECORD

2014 – present University of Oslo, Physics Institute: Associate Professor II (20% position)

1998 - present SINTEF ICT, Instrumentation Department, presently as Senior Scientist and Research Manager at the Biomedical Instrumentation Group

1994 – 1998 Doctoral studies financed by an NTNU Dept. of Physics scholarship (75% position). Scientific assistance and teaching in lab courses, NTNU Dept. of Physics. (25% position)

EDUCATION AND TRAINING

2010	CITI training - US Human Biomedical Research Training through the CITI Collaborative Institutional Training Initiative: Biomedical Research Investigators and Key Personnel, Stage 1: Basic Course.
2004-2005	SINTEF ICT/Ankerhus AS, Research Management Education, 250 hours. Work financed by SINTEF ICT
2001-2003	The Norwegian School of Management (BI), Oslo: Project management and leadership education, 10 credits (½ year). Work financed by SINTEF ICT
1994-1998	Norwegian University of Science and Technology (NTNU (former NTH)), Trondheim, Physics Department, doctor ingeniør (dr.ing.) in physics (similar requirements as for a PhD)
1989-1994	Norwegian Institute of Technology (NTH), Trondheim, Physics Department, civil engineer in physics

Dr. ing. research topic: Experimental investigation of gas adsorption on well-defined single crystal metal surfaces by means of high resolution core level spectroscopy (also known as X-ray photoemission spectroscopy – XPS), mainly based on experimental results measured at the synchrotron radiation light source MAX-lab in Lund, Sweden.

PROJECT EXAMPLES

Below follows a summary of recent projects where I have had the main project acquisition responsibility, and then held central project management roles.

2021 →	CANARY (Norwegian Research Council – Innovation project in the private sector) <i>MicroNano biosensor for continuous vital sign monitoring</i> . SINTEF Principal investigator
2019 →	Director for the key strategic research area of Health and Well-being at SINTEF
2017-2021	Understand how I am! (Norwegian Research Council – Innovation project in the public sector): <i>Technology supported health and care services for persons with severely limited communication skills</i> . SINTEF Principal investigator.
2013-2016	EmerEEG (EU FP7 Research for the benefit of SME's program): <i>A portable device for early detection and treatment of traumatic brain injury based on advanced qEEG and HDTES to prevent major health problems and specially for use in emergencies and telemedicine</i> . Project Technical Manager and in charge of Work packages for i) system requirements and design, ii) instrumentation development, and iii) system integration and testing.
2011-2015	d-LIVER (EU ICT FP7 IP): <i>ICT-enabled, cellular artificial liver system incorporating personalized patient management and support</i> . SINTEF Principal Investigator, Work Package Leader for WP 2: System design and medical device regulatory requirements
2011-2015	CORBYS (EU ICT FP7 IP): Cognitive Control Framework for Robotic Systems. SINTEF Principal Investigator during first year of the project of the project
2008-2012	ESUMS (US congressionally funded project, directed by USARMCM/TATRC, with US partner ViTel Net): <i>Enhanced Sustained Use Monitoring System</i> (Wireless physiological monitoring). Project co-principal investigator and SINTEF Principal Investigator.

- 2007-2010 SmartHEALTH (EU FP6 IP): *Smart Integrated Biodiagnostic Systems for Healthcare*. SINTEF principal investigator.
- 2004-2007 SUMS (US congressionally funded project, directed by USARMCM/TATRC, with US partner ViTel Net): *Sustained Use Monitoring System* (Wireless physiological monitoring). SINTEF principal investigator.
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AWARDS

1. Færevik H, Holbø K, Reitan J, Røyset A, Strisland F, and Reinertsen R: *SINTEFs Annual Award for Outstanding Research 2008 for work on the Helly Hansen helicopter transport and rescue suit SeaAir*
 2. Seeberg T, Austad H O, Strisland F, and Svagård I: pHealth Innovation Award 2010 for the poster: *Development of a new sensor fusion algorithm to improve decision support for subjects exposed to heat stress*. 7th International Conference on Wearable Micro and Nano Technologies for Personalized Health, Berlin, May 2010
 3. Frode Strisland. SINTEF Digital: Communication award 2022
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SCIENTIFIC COMMITTEES

1. Member of *SN/K 113 Quality Management of Medical Equipment*; the Norwegian national standards committee for quality management and patient security in medical equipment. (2016 →)
 2. Member of *SN/K 587 E-health*; the Norwegian national standards committee for e-health technology (2021→)
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PhD EVALUATION COMMITTEES

1. Humayra Ferdous, University of Oslo, Physics Institute, 2014 (2nd opponent)
 2. Bernt Jørgen Nordbotten, University of Oslo, Physics Institute, 2014 (2nd opponent)
 3. Luis André Lourenço Fernandes, University College of Southeast Norway, 2017 (1st opponent)
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JOURNAL AND CONFERENCE PUBLICATIONS

Google scholar statistics 2023: Citations: 661 h-index: 16 i10-index: 19

1. Øderud, Tone; Boysen, Elin S; Strisland, Frode; Dahl, Inger-Lise; Kildal, Emilie; Hassel, Bjørnar; Morland, Cecilie. *'Identifying Pain and Distress in Non-verbal Persons with Intellectual Disability: Professional Caregivers' and Parents' Attitudes Towards Using Wearable Sensors'*. *Technology and Disability*, vol. 35, no. 3, pp. 207-216, 2023. doi: 10.3233/TAD-220390
2. Stray-Pedersen, Arne; Strisland, Frode; Rognum, Torleiv Ole; Hubertus Schiks, Luuk Antoon & Loeve, Arjo J. (2021). *Violent Infant Surrogate Shaking: Continuous High-Magnitude Centripetal Force and Abrupt Shift in Tangential Acceleration May Explain High Risk of Subdural Hemorrhage*. *Neurotrauma Reports*. ISSN 2689-288X. 2(1), s. 224–231. doi: 10.1089/neur.2021.0013
3. Jahren, Silje Ekroll; Aakvaag, Niels; Strisland, Frode; Vogl, Andreas; Liberale, Alessandro & Liverud, Anders Erik (2021). *Towards Human /Motion Tracking Enhanced by Semi-Continuous Ultrasonic Time-of-Flight Measurements*. *Sensors*. ISSN 1424-8220. 21(7). doi: 10.3390/s21072259

4. Emilie Kildal, Kristine Stadskleiv, Elin S. Boysen, Tone Øderud, Inger-Lise Dahl, Trine M. Seeberg, Svein Guldal, Frode Strisland, Cecilie Morland & Bjørnar Hassel: *Increased heart rate functions as a signal of acute distress in non-communicating persons with intellectual disability*. Sci Rep 11, 6479 (2021). <https://doi.org/10.1038/s41598-021-86023-6>
5. Berntsen, Gro Karine Rosvold; Strisland, Frode; Malm-Nicolaisen, Kristian; Smaradottir, Berglind; Fensli, Rune Werner & Røhne, Mette (2019). *The Evidence Base for an Ideal Care Pathway for Frail Multimorbid Elderly: Combined Scoping and Systematic Intervention Review*. Journal of Medical Internet Research. ISSN 1438-8871. 21(4) . doi: 10.2196/12517
6. Halvorsrud, Ragnhild; Røhne, Mette; Celius, Elisabeth Gulowsen; Moen, Stine Marit & Strisland, Frode (2019). *Application of Patient Journey Methodology to Explore Needs for Digital Support A Multiple Sclerosis Case Study*, In Conceição Granja & Terje Solvoll (ed.), Proceedings of the 17th Scandinavian Conference on Health Informatics 2019. Linköping University Electronic Press. ISBN 978-91-7929-957-6. kapittel. s 148 – 153
7. Seeberg, Trine Margrethe; Orr, James; Austad, Hanne Opsahl; Røed, Morten Hamremoen; Dalgard, Steffen Harald; Houghton, David; Jones, David A. & Strisland, Frode (2017). *A Novel Method for Continuous, Noninvasive, Cuff-Less Measurement of Blood Pressure: Evaluation in Patients With Nonalcoholic Fatty Liver Disease*. IEEE Transactions on Biomedical Engineering. ISSN 0018-9294. 64(7), s 1469- 1478 . doi: 10.1109/TBME.2016.2606538
8. Strisland, Frode; Svagård, Ingrid Storruste; Austad, Hanne Opsahl & Reitan, Jarl (2017). *Meeting end user needs in collaborative medical device technology development research projects: A qualitative case study*. Studies in Health Technology and Informatics. ISSN 0926-9630. 237, s 49- 54 . doi: 10.3233/978-1-61499-761-0-49 F
9. Strisland, Frode; Vedum, Jon; Liverud, Anders Erik; Dalgard, Steffen Harald; Brødreskift, Tomas; Albert, Bruno; Noyvirt, Alexandre; Setchi, Rossitza; Vene, Karl; Herranen, Henrik; Kirs, Maarjus; Antal, Andrea; Schellhorn, Klaus & Sjaheim, Haldor (2017). *Portable qEEG and HD-tCS device for point-of-injury traumatic brain injury diagnostics*. Studies in Health Technology and Informatics. ISSN 0926-9630. 237, s 198- 203 . doi: 10.3233/978-1-61499-761-0-198
10. Austad, Hanne Opsahl; Vedum, Jon; Hamremoen Røed, Morten; Dalgard, Steffen Harald; Brødreskift, Tomas; Liverud, Anders Erik; Strisland, Frode & Seeberg, Trine Margrethe (2016). *An Unobtrusive Wearable Device for Ambulatory Monitoring of Pulse Transit Time to Estimate Central Blood Pressure*. I Gilbert, James (Red.), BIOSTEC 2016: 9th International Joint Conference on Biomedical Engineering Systems and Technologies, February 21-23, 2016, in Rome, Italy. SciTePress. ISSN 978-989-758-170-0. s. 179–186. doi: 10.5220/0005701401790186.
11. Albert, Bruno; Zhang, Jingjing; Noyvirt, Alexandre; Setchi, Rossitza; Sjaheim, Haldor; Velikova, Svetla & Strisland, Frode (2016). *Automatic EEG Processing for the Early Diagnosis of Traumatic Brain Injury*. Procedia Computer Science. ISSN 1877-0509. 96, s. 703–712. doi: 10.1016/j.procs.2016.08.253.
12. Albert, Bruno; Noyvirt, Alexandre; Setchi, Rossitza; Sjaheim, Haldor; Velikova, Svetla & Strisland, Frode (2016). *Portable Decision Support for Diagnosis of Traumatic Brain Injury*. Procedia Computer Science. ISSN 1877-0509. 96, s. 692–702. doi: 10.1016/j.procs.2016.08.252.
13. Liverud, Anders Erik; Dalgard, Steffen Harald; Fleurey, Franck; Vedum, Jon; Røed, Morten Hamremoen; Badii, Atta; Oudi, Hamid; Kahn, Ali; Strisland, Frode: 'A Multimodal Human Sensory System to support Mobile Gait Rehabilitation'. TAR 2015: Technically Assisted Rehabilitation; 2015-03-12 - 2015-03-13
14. Seeberg, Trine Margrethe; Vedum, Jon; Sandsund, Mariann; Austad, Hanne Opsahl; Liverud, Anders Erik; Vardøy, Astrid-Sofie Borge; Svagård, Ingrid Storruste & Strisland, Frode (2014). *Development of a wearable multisensor device enabling continuous monitoring of vital signs and activity*, Biomedical and Health Informatics. IEEE-EMBS International Conference. 2014. (BHI 2014), Valencia, Spain, 1-4 June 2014. IEEE Press. ISSN 9781479921324. s. 213–218. doi: 10.1109/bhi.2014.6864342.

15. Sjaaheim, H.; Albert, B.; Setchi, R.; Noyvirt, A.; Strisland, F., "A portable medical system for the early diagnosis and treatment of Traumatic Brain Injury," in Systems, Man and Cybernetics (SMC), **2014** IEEE International Conference on , vol., no., pp.2529-2534, 5-8 Oct. 2014 Pages: 2529 - 2534, DOI: 10.1109/SMC.2014.6974307
16. Svagård, H.O. Austad, T. Seeberg, J. Vedum, A. Liverud, B.M. Mathiesen, O.C. Bendixen, B. Keller, P. Osborne, F. Strisland: *A Usability Study of a Mobile Monitoring System for Congestive Heart Failure Patients Activity Level*. The 25th European Medical Informatics Conference - MIE2014 - in Istanbul, August 31st - September 3rd, **2014**. Stud Health Technol Inform. 2014;205:528-32.
17. Trine M. Seeberg, Jon Vedum, Mariann Sandsund, Hanne O. Austad, Anders E. Liverud, Astrid-Sofie B. Vardøy, Ingrid Svagård, and Frode Strisland: *Development of a Wearable Multisensor Device Enabling Continuous Monitoring of Vital Signs and Activity*, 2014 IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), IEEE Conference Publications, Publication Year: **2014** , Page(s): 213- 218
18. Strisland, F. ; Svagard, I. ; Seeberg, T.M. ; Mathisen, B.M. ; Vedum, J. ; Austad, H.O. ; Liverud, A.E. ; Kofod-Petersen, A. ; Bendixen, O.C.: *ESUMS: A mobile system for continuous home monitoring of rehabilitation patients*, 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2013, IEEE Conference Publications, Publication Year: **2013**, Page(s): 4670 – 4673
19. Seeberg, Trine M.; Royset, Arne; Jahren, Susannah; Strisland, Frode: *Printed Organic Conductive Polymers Thermocouples in Textile and Smart Clothing Applications*, IEEE Engineering in Medicine and Biology Society Conference Proceedings, Pages: 3278-3281 Published: 2011 Publication Year: **2011** , Page(s): 3278 – 3281
20. Johannessen R, Oldervoll F and Strisland F: *High temperature reliability of aluminium wire-bonds to thin film, thick film and low temperature co-fired ceramic (LTCC) substrate metallization*, Microelectronics Reliability, Volume 48, Issue 10, October **2008**, Pages 1711-1719
21. Oldervoll F, Strisland F: *Die-attach to ceramic substrates for high temperature applications*, European Microelectronics and Packaging Symposium **2004**, pp. 331 – 336
22. Oldervoll, F; Strisland, F: *Wire-bond failure mechanisms in plastic encapsulated microcircuits and ceramic hybrids at high temperatures*, Microelectronics Reliability, 2004;44;1009-1015
23. Ramstad A, Strisland F, Ramsvik T, Borg A. *CO adsorption on the Pt/Rh(100) surface studied by high-resolution photoemission*. SURFACE SCIENCE **2000**; 458; 135-146
24. Ramstad A, Strisland F, Raaen S, Borg A, Berg C. *CO and O-2 adsorption on the Re/Pt(111) surface studied by photoemission and thermal desorption*. SURFACE SCIENCE **1999**;440:290-300.
25. Jaworowski AJ, Beutler A, Strisland F, et al. *Adsorption sites in O and CO coadsorption phases on Rh(111) investigated by high-resolution core-level photoemission*. SURFACE SCIENCE **1999**;431:33-41.
26. Ramstad A, Strisland F, Raaen S, Worren T, Borg A, Berg C. *Growth and alloy formation studied by photoelectron spectroscopy and STM*. SURFACE SCIENCE **1999**;425:57-67.
27. Wiklund M, Jaworowski A, Strisland F, et al. *Vibrational fine structure in the C 1s photoemission spectrum of the methoxy species chemisorbed on Cu(100)*. SURFACE SCIENCE **1998**;418:210-218.
28. Strisland F, Ramstad A, Ramsvik T, Borg A. *CO adsorption on the Rh(100) surface studied by high resolution photoelectron spectroscopy*. SURFACE SCIENCE **1998**;415:L1020-L1026
29. Beutler A, Strisland F, Sandell A, et al. *Adsorption properties of a mixed surface studied by high resolution core level photoemission: CO 0.5 ML Pd/Rh(111)*. SURFACE SCIENCE **1998**;411:111-122.
30. Strisland F, Ramstad A, Berg C, Raaen S. *The surface core-level shift of the Nb(110) surface*. PHILOSOPHICAL MAGAZINE LETTERS **1998**;78:271-276

31. Strisland F, Ramstad A, Berg C, Raaen S. *Valence variations in the monolayer regime of Sm on the Nb(110) surface*. *SURFACE SCIENCE* **1998**;410:344-350.
32. Strisland F, Beutler A, Jaworowski AJ, et al. *Adsorption sites in coadsorption systems determined by photoemission spectroscopy: K and CO coadsorbed on Rh(111)*. *SURFACE SCIENCE* **1998**;410:330-343.
33. Berg C, Venvik HJ, Strisland F, Ramstad A, Borg A. *Nucleation and growth of Au overlayers on Pt(100)-hex-R0.7 degrees studied by STM and photoelectron spectroscopy*. *SURFACE SCIENCE* **1998**;409:1-15.
34. Strisland F, Raaen S, Ramstad A, Berg C. *Photoemission study of Sm on Ta(110): Valence states in the initial growth phase*. *PHYSICAL REVIEW B-CONDENSED MATTER* **1997**;55:1391-1394.
35. Strisland F, Raaen S. *Initial oxidation of the Sc-on-Al(111) system, as studied by photoelectron spectroscopy*. *JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA* **1996**;77:25-31.

Dissertation for the Norwegian doktor ingeniør degree:

Frode Strisland: "Adsorbates and overlayers on metal surfaces studied by photoelectron spectroscopy". Thesis 1998:57. Institute of Physics, NTNU, Trondheim.

POPULAR PRESS AND NEWS ARTICLES SINCE 2020

Chronicles (in Norwegian)

1. **Dalsmo, Morten; Strisland, Frode:** Vi trenger en plan for bærekraft. *Dagens medisin* 2023
2. **Landmark, Andreas D.; Antypas, Konstantinos; Eitzen, Ingrid; Strisland, Frode.** Hvordan setter Direktoratet for e-helse sine mål?. *Dagens medisin* 2022
3. **Landmark, Andreas D.; Melby, Line; Strisland, Frode.** Har vi en bærekraftig helsetjeneste i Norge?. *dagensmedisin.no* 2022
4. **Strisland, Frode; Eitzen, Ingrid; Landmark, Andreas Dypvik.** Gir e-helsetiltak bedre og tryggere tjenester?. *Dagens medisin* 2022
5. **Reinertsen, Randi Eidsmo; Strisland, Frode; Røhne, Mette.** Digitalisering kan berge behandlingstilbudet. *Dagens næringsliv* 2020
6. **Skrøvseth, Stein Olav; Aanestad, Margunn; Strisland, Frode; Olsen, Per Ingvar.** Norge trenger en kunnskapsbasert e-helselov. *Dagens medisin* 2020
7. **Strisland, Frode; Røhne, Mette.** Kunnskapsløs e-helse er dyrt og farlig. *Aftenposten (morgenutg. : trykt utg.)* 2020
8. **Strisland, Frode; Røhne, Mette.** Uten fire svar kan ny journalløsning bli farlig for pasientene. *SINTEF AS (ISBN starter med 978-82-14-)* 2020

In addition contributor or ghost author of several chronicles signed by SINTEF and SINTEF responsible for responses in several public consultation processes.

Media contributions or interviews (in Norwegian)

1. **Strisland, Frode.** Forskar: – Smittestopp-appen verkar ikkje så godt. *NRK.no* 2021
2. **Strisland, Frode.** Få har lastet ned smittestoppapp. NRK Nyheter [Radio] 2021-06-26
3. **Strisland, Frode.** Har brukt 57 mill på smitteapper. Det tilsvarer 15 200 kr pr smittevarsel til nå. *E24.no* [Internett] 2021-06-26
4. **Strisland, Frode.** Kun én av fire har lastet ned smitteapp. *Aftenposten (morgenutg. : trykt utg.)* 2021
5. **Strisland, Frode.** Over 400.000 har lasta ned Smittestopp: – For få, meiner forskar. NRK [Internett] 2021-01-13
6. **Strisland, Frode.** -Smittestopp virkar ikkje. *NRK, P1* 2021
7. **Strisland, Frode.** Smittestoppappen virkjar ikke så godt. NRK Vestland [Internett] 2021-04-08
8. **Strisland, Frode.** Smittevern. Klassekampen [Avis] 2021-01-02
9. **Strisland, Frode.** 15.200 kroner for hvert varsel fra smitteappene. *e24 (internett)* 2021
Strisland, Frode. For få bruker Smittestopp. *Klassekampen* 2020
SINTEF
10. **Strisland, Frode.** Forskere om Akson: – Som å lage koronavaksine uten plan for utvikling og testing. *Dagens medisin* 2020

NETWORK AND COMMITTEE WORK

In charge of SINTEF group strategy development within the field Health and Well-being 2022→

Hilde Nebb and Frode Strisland: Facilitation, description and establishment of Health and life science as a centre of gravity within Oslo Science City 2020-2021

Senior program committee member - The IEEE International Conference on Healthcare Informatics-Systems track 2020 and 2021

Advisory Board member, Norwegian Smart Care Cluster, 2022 →

Horizon Europe Expert work as project proposal evaluator, rapporteur, and panel member 2022→

Scientific program committee – Oslo Life Science conference Feb 2022

Scientific program committee - Norway Life Science conference Feb 2023

Co-Moderator - NTNU-SINTEF European Strategy Summit 2021, Session “Sustainable health care”:
<https://www.dn.no/staticprojects/annonsorinnhold/ntnu-sintef/ess2021/> (Nov 2021)

Moderator – EHIN2022 (E-health in Norway), Session entitled: Can e-health technology secure the sustainability of the health and care services? Nov 2022

Program committee member Tekna Health Technology Conference 2020 and 2021

International Advisory Board member, *The Multicorder Project: CMOS Sensor Technology For The Metabolome*, School of Engineering, University of Glasgow, UK, during 2013-2016 (Project funded under a £3.4M UK Engineering and Physical Sciences Research Council grant)

UiO Life Science: SPARK mentor 2020-2022 Mari Mohn Paulsen → FoodCapture AS