Curriculum vitae with Track record

Dec.18, 2020

PERSONAL INFORMATION

Family name, First name: Weman, Helge
Date of birth: 25.08.1960
Sex: Male
Nationality: Swiss and Norwegian
Researcher unique identifiers: ResearcherID: A-6245-2013, ORCID: 0000-0001-5470-9953
URL for personal web site: https://www.ntnu.edu/employees/helge.weman

EDUCATION

1992	Docent (habilitation): Dept. of Physics, Linköping University (LiU), Sweden
1988	PhD: Disputation date: *30.09.1988.*
	Dept. of Physics, Linköping University, Sweden
1983	Master, Applied Physics, Linköping University, Sweden

CURRENT AND PREVIOUS POSITIONS

2005-	Professor (50% since July 2016)
	Dept. of Electronic Systems, Norwegian University of Science and Technology (NTNU)
2017-	Chief Scientific Officer (70%), CrayoNano AS, Norway
2012-2017	Chief Technology Officer (50%), CrayoNano AS, Norway
1996-2005	Senior scientist, Swiss Federal Institute of Technology, Lausanne, Switzerland
1997-2005	Associate professor (~ 20%), Dept. of Physics, Linköping University, Sweden
1992-1996	Assistant professor, Dept. of Physics, Linköping University, Sweden
1989-1991	Postdoc, NSF-QUEST Centre, University of California, Santa Barbara, USA

FELLOWSHIPS

1992-1995	Research associate fellowship, Swedish Research Council for Engineering Sciences
1993	Scholarship, Scandinavia-Japan Sasakawa Foundation
1989-1990	Postdoc fellowship, Swedish Natural Science Research Council
1989	Scholarship, Wenner-Gren Foundation for Scientific Research

MOBILITY

2016	Visiting prof. (1 month sabbatical), Chinese Academy of Sciences, Beijing, China
2015-2016	Visiting prof. (6 months sabbatical leave), Sophia University, Tokyo, Japan
2011	Visiting scientist (6 months sabbatical leave), IBM Zürich Res. Lab, Switzerland
2008	Visiting professor (6 months sabbatical leave), EPFL, Lausanne, Switzerland
1993-1994	Visiting scientist (6 months sabbatical leave), NTT Opto-electronics Lab, Atsugi, Japan

SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

2005-	7 PhDs as main supervisor (2 active), Dept. of Electronic Systems, NTNU
	6 PhDs as co-supervisor of which (1 active), Dept. of Electronic Systems, NTNU
	8 Postdocs, Dept. of Electronic Systems, NTNU
	29 Master students, Dept. of Electronic Systems, NTNU
1997-2005	3 PhDs, 5 Master students, Dept. of Physics, LiU, Sweden

TEACHING ACTIVITIES

2014-2015	Nanoscale Device Technology (MSc level), NTNU
2010-2013	Nanophotonics (MSc level), NTNU

2007-2009 Solid State Materials and Nanostructures (MSc level), NTNU
2006-2008 Nanoelectronics (MSc level), NTNU
2006-2016 Introduction to Nanotechnology (Msc level), NTNU
1994-2004 Optoelectronics (Msc level), LiU, Sweden

ORGANISATION OF INTERNATIONAL SCIENTIFIC MEETINGS

2017- Program committee of "Int. workshop Physics of Semiconductor Devices"
2015- Program committee of "Int. Advanced Nanomaterials Conf."
2010-2016 Program committee of "Int. Nanowire Growth workshop"
2010-2014 Program committee of "Int. conf. on Optoelectronic Properties of Materials"
2008-2010 Organizing committee of Norwegian Electro-Optics meeting,
2008 Organizing committee of 17th Int. Laser Physics Workshop, Trondheim
2008 Chairman of the 1st Int. Nanophotonics&Nanolaser satellite meeting, Trondheim

INSTITUTIONAL RESPOSIBILITIES

2006-2016 Member of "NTNU-NanoLab" leader group
2006-2011 Member of study board for "Master of Nanotechnology" at NTNU
2008- Chair of PhD thesis examination committees

PROJECT MANGAGEMENT EXPERIENCE

2016-2019 Consortium leader of EU-project "NAGRALED", 6 international partners
2010-2013 Consortium leader of Nordic Top-Research project "NANORDSUN", 6 nordic partners
2012- Project manager at CrayoNano for Innovation projects (NANO2021, Innovasjon Norge)
2006- Project manager at NTNU for several external 4- years projects from the Research Council of Norway programs (FRIPRO, NANOMAT, RENERGI, NANO2021 and ENERGIX).
1992-2005 Project manager for several external projects from the Swedish Research Council.

COMMISSIONS OF TRUST

2012-2020 Member of the Board of Directors for CrayoNano AS
2015 Panel member of evaluators for Graphene Flagship FLAG-ERA projects
2011-2012 Panel member of evaluators for "Technical Physics", Swedish Research Council
Project reviewer for National Research Councils (Norway, Sweden, Austria, France, Israel, Singapore, USA)
Journal referee for Nature Nanotechnology, Nature Communications, Nature Asia, Nano Letters, Advanced Materials, ACS Nano, Nanoscale, Nanotechnology, Phys. Rev. Lett., Phys. Rev. B., Appl. Phys. Lett., J. Appl. Phys., Optics Express, Semicond. Sci. Tech., Crystal Growth and Design, J. Cryst. Growth., ...
12 PhD evaluation committees (Norway, Sweden, Denmark, Netherlands)
11 Professor evaluation committees (Norway, Sweden, Italy, Cyprus, Canada, India)

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2018- Member of International Ultraviolet Association
2011- Editorial Board Member of Nanoscience & Nanotechnology-ASIA
2011- Member of American Nano Society
2010- Elected member of Norwegian Academy of Technological Sciences (NTVA)

MAJOR COLLABORATIONS

Prof. Bjørn-Ove Fimland, molecular beam epitaxy growth of III-V NWs, Dept. of Elect. Systems, NTNU
Prof. Ton van Helvoort, transmission electron microscopy of III-V NWs, Dept. of Physics, NTNU
CrayoNano AS, (CTO Dr. Ida Marie Høiaas), MOCVD growth of AlGaN nanowires, graphene processing and hole mask fabrication on graphene.
Prof. Zhiqiang Liu, MOCVD growth of III-V semiconductors on graphene, Semiconductor Institute, Chinese Academy of Sciences, Beijing, China
Prof. Zhongfan Liu, CVD growth of graphene, Dept. of Chemistry, Peking Uni., China.
Prof. Katsumi Kishino, III-Nitride nanocolumn LEDs grown by MBE, Sophia University, Tokyo, Japan.
Prof. Anders Gustafsson, CL characterization of III-V NWs, Lund University, Sweden.
Prof. Sang-Wook Lee, exfoliation and manipulation of graphene/nanowires, Ewha Womans Uni, Korea.

TRACK RECORD

- ***Total journal publications:*** **148** including Nano Letters, Nature Com., PRL, PRB, APL, etc.)
- ***Total citations:*** **3037. *h-index:*** **28** (Google Scholar Dec. 18. 2020)
- ***300 + international conference papers***
- ***70 + invited talks at peer-reviewed international conferences***
- ***14 patent family application with international country filings***
- ***Media contributions:*** Several interviews, chronicles and other contributions in Norwegian TV & Radio, national newspapers, Norwegian and international technical media, YouTube video (~100k views), etc.
- ***Main founder*** of CrayoNano AS in 2012. Acting as CTO during 2012-2017 and CSO since 2017.

10 selected peer-reviewed publications since 2008 (chronological order)

1. *Growth and characterization of wurtzite GaAs nanowires with defect- free zinc blende GaAsSb inserts*
   D.L. Dheeraj, G. Patriarche, H.L. Zhou, T.B. Hoang, A.F. Moses, S. Grønsberg, A.T.J. van Helvoort, B.-O. Fimland, and **H. Weman**,
   Nano Lett. **8**, 4459 (2008). **Cited 101 times.**
2. *Observation of free exciton photoluminescence emission from single wurtzite GaAs nanowires*
   T.B. Hoang, H. Zhou, A.F. Moses, D.L. Dheeraj, B.-O. Fimland, and **H. Weman**,
   Appl. Phys. Lett. **94**, 133105 (2009). **Cited 103 times.**
3. *Vertically aligned GaAs nanowires on graphite and few-layer graphene: Generic model and epitaxial growth*
   M.A. Munshi, D.L. Dheeraj, V.T. Fauske, D.C. Kim, A.T.J. van Helvoort, B.-O. Fimland, and **H. Weman,**
   Nano Lett. **12**, 4570 (2012). **Cited 122 times**
4. *A story told by a single nanowire: Optical properties of wurtzite GaAs*
   L. Ahtapodov, J. Todorovic, P. Olk, T. Mjåland, P. Slåttnes, D.L. Dheeraj, A.T.J. van Helvoort, B.O. Fimland, and **H. Weman,**
   Nano Lett. **12**, 6090 (2012). **Cited 76 times.**
5. *Position controlled uniform GaAs nanowires on silicon using nanoimprint lithography*
   A. M. Munshi, D.L. Dheeraj, V.T. Fauske, D.C. Kim, J. Huh, J.F. Reinertsen, L. Ahtapodov, K.D. Lee, B. Heidari, A.T.J. van Helvoort, B.O. Fimland, and **H. Weman**,
   Nano Lett. **14**, 960 (2014). **Cited 91 times.**
6. *Inducing a direct-to-pseudodirect bandgap transition in wurtzite GaAs nanowires with uniaxial stress*
   G. Signorello, E. Lörtscher, P.A. Khomyakov, S. Karg, D.L. Dheeraj, B. Gotsmann, **H. Weman** and H. Riel,
   Nature Communications, **5**, 3655 (2014). **Cited 68 times.**
7. *Vertically oriented growth of GaN nanorods on Si using graphene as atomically thin buffer*
   M. Heilmann, A.M. Munshi, G. Sarau, M. Göbelt, C. Tessarek, V.T. Fauske, A.T.J. van Helvoort, J. Yang, M. Latzel, B. Hoffmann, G. Conibeer, **H. Weman** and S. Christiansen,
   Nano Lett., **16**, 3524 (2016). **Cited 39 times.**
8. *Single-mode near-infrared lasing in a GaAsSb/GaAs nanowire superlattice at room temperature.*
   D. Ren, L. Ahtapodov, J.S. Nilsen, J. Yang, A. Gustafsson, J. Huh, G. Conibeer, A.T.J. van Helvoort, B.O. Fimland and **H. Weman**,
   Nano Letters **18,** 2304-2310 (2018). **Cited 21 times.**
9. *Selective area growth of AlGaN nanopyramid arrays on graphene by metal-organic vapor phase epitaxy.*
   A.M. Munshi, D.C. Kim, C.P. Heimdal, M. Heilmann, S.H. Christiansen, P.E. Vullum, A.T.J. van Helvoort and **H. Weman**,
   Appl. Phys. Lett. **113,** 263102 (2018). **Cited 3 times.**
10. *GaN/AlGaN nanocolumn ultraviolet light-emitting diode using double layer graphene as substrate and transparent electrode.*
    I.M. Hoiaas, A.L. Mulyo, P.E. Vullum, D.C. Kim, L. Ahtapodov, B.O. Fimland, K. Kishino and **H. Weman**,
    Nano Letters **19,** 1649-1658 (2019). **Cited 2 times.**

Book chapters/reviews (4):

1. *Heterostructured III-V nanowires with mixed crystal phases grown by Au-assisted MBE*
   D.L. Dheeraj, H.L. Zhou, A.F. Moses, T.B. Hoang, A.T.J. Van Helvoort, B.O. Fimland, and **H. Weman**,
   Ch. 2 in "Nanowires", ed. Paola Prete, IN-TECH, Austria, 2010, http://sciyo.com/books/show/title/nanowires
2. *III-antimonide nanowires*
   H. Weman and D.L. Dheeraj
   Chapter 5 in the book "Advances in III-V Semiconductor Nanowires and Nanodevices", eISBN 978-1-60805-052-9, Ed. Jianye Li, Deli Wang and Ray R. LaPierre, Bentham science publishers, Ch. 5, pp. 89-104, 2011.
3. *Advances in semiconductor nanowires grown on graphene*
   A.M. Munshi and **H. Weman**,
   Phys. Status Solidi RRL **7**, 713 (2013). (Review article in focus issue on "Semiconductor Nanowires")

4. *Epitaxially grown III-arsenide-antimonide nanowires for optoelectronic applications*
D. Ren, L. Ahtapodov, A.T.J. van Helvoort, **H. Weman**, and B.O. Fimland,
Nanotechnology **30**, 294001 (2019)

14 Patent family applications. Granted: 62. Pending: +100

1. *Epitaxial growth of semiconductor nanowires on graphitic layers*
Inventors **H. Weman**, B.O. Fimland, and D.C. Kim
UK patent application No: 1021112.6, filed Dec. 13, 2010.
WO2012/080252.
2. *Graphene top contact to metal catalyst nanowires*
Inventors **H. Weman**, B.O. Fimland, and D.C. Kim
UK patent application No: 1200355.4, filed Jan. 10, 2012.
WO2013/104723.
3. *Hybrid multilayer nanowire/graphene solar cell*
Inventors **H. Weman**, B.O. Fimland, and D.C. Kim
UK patent application No: 1211038.3, filed June 23, 2012.
WO2013/190128.
4. *Nanowire hot carrier solar cell*
Inventor **H. Weman**
UK patent application No: 1909182.6, filed June 26, 2020.
5. *Semiconductor thin film growth on graphene*
Inventors B.O. Fimland, D.L. Dheeraj and **H. Weman**
UK patent application No: 1311101.8, filed June 21, 2013.
WO2014/202796.
6. *Radial p-n junction nanowire solar cell*
Inventors C.G. Lim and **H. Weman**
UK patent application No: 1314566.9, filed Aug. 14, 2013.
WO2015/022414.
7. *Oxide hole mask on graphene*
Inventors D.C. Kim, I.M. Hoiaas, C.P. Heimdal, B.O. Fimland and **H. Weman**
UK patent application No: 1512230.2, filed July 13, 2015.
WO2017/009395.
8. *Nanowire/graphene flip-chip UV LED*
Inventors D.L. Dheeraj, D.C. Kim, B.O. Fimland and **H. Weman**
UK patent application No: 1512231.0, filed July 13, 2015.
WO2017/009394.
9. *Semiconductor seed layer on graphene*
Inventors A.M. Munshi, D. Ren, I.M. Hoiaas, D.C. Kim, D.L. Dheeraj, B.O. Fimland and **H. Weman**
UK patent application No: 1513567.6, filed July 31, 2015.
WO2017/021380.
10. *Nanowire lasers and RCLEDs on graphene*
Inventors B.O. Fimland, **H. Weman** and D. Ren
UK patent application No: 1701829.2, filed Feb. 3, 2017.
PCT filed Feb. 3, 2018. WO2018/141974.
11. *Nanowires on beta-Ga_2O_3 substrate*
Inventors **H. Weman**, B.O. Fimland and D. Ren
UK patent application No: 1705575.5, filed April 10, 2017.
PCT filed April 10, 2018. WO2018/189205.
12. *Hexagonal-BN semiconductor nanowire devices*
Inventors M. Munshi, **H. Weman** and B.O. Fimland
UK patent application No: 1814693.6, filed Sept. 10, 2018. PCT filed Sept. 10, 2019.
WO2020/053231.
13. *Graphene hole mask*
Inventors M. Munshi, **H. Weman**, D.L. Dheeraj, B.O. Fimland. L. Vigen and D. Barriet.
UK patent application No: 910170.8, filed July 7, 2019. PCT filed July 16, 2020.
14. *Remote epitaxy of nanowires on graphene*
Inventors M. Munshi, **H. Weman** and B.O. Fimland
UK patent application No: 1913701.7, filed Sept. 23, 2019. PCT filed Sept. 23, 2020.