

CURRICULUM VITAE AND ACADEMIC TRACK RECORD

Prof. Dr. habil Jan Peter Felix Lagerwall

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Qualifications

M.Sc. 11.04.1997 Chalmers University of Technology,
(Engineering Department of Microwave Technology, Göteborg, Sweden
physics) Diploma work: *Optical Implementation of Neural Networks for Pattern Recognition*.
Advisor: docent. S. Hård

Techn. Lic.* 18.02.2000 Chalmers University of Technology, Department of Microelectronics and
(Materials Nanosciences / Department of Physics, Göteborg, Sweden
science) Thesis: *Phase Characterization of Polar Liquid Crystals Using Dielectric Spectroscopy*.
Advisor: Prof. B. Stebler

Ph.D. 08.05.2002 Chalmers University of Technology, Department of Microelectronics and
(Materials Nanosciences / Department of Physics, Göteborg, Sweden
science) Thesis: *Structures and Properties of the Chiral Smectic C Liquid Crystal Phases –
Ferro- and Antiferroelectricity in Soft Matter*. Advisor: Prof. B. Stebler

Docent* 05.04.2007 Chalmers University of Technology,
(Physics) Department of Physics, Göteborg, Sweden
Docent lecture title: *Liquid crystals in modern soft matter physics research*

Habilita- 14.12.2010 Martin-Luther-Universität Halle-Wittenberg, Faculty of Natural Sciences II -
tion* (Phys- Chemistry, Physics and Mathematics, Halle, Germany
ical Chem- Thesis: *Three facets of modern liquid crystal science*
istry)

**Techn. Lic. is an intermediate title on the way to the Swedish Ph.D degree. Docent and Habilitation are the Swedish and German titles, respectively, indicating qualification for full professorship.*

Current position

Since 03/2014 Professor, University of Luxembourg, Faculty of Science, Technology and Communication, Physics and Materials Science Research Unit Luxembourg

Previous group leader positions

03/2013 - Associate professor (tenure track), Seoul National University, Suwon,
02/2014 Graduate School of Convergence Science & Technology South Korea

09/2010 - Assistant professor (tenure track), Seoul National University, Suwon,
02/2013 Graduate School of Convergence Science & Technology South Korea

09/2007 - Junior research group leader (with research, teaching and student
08/2010 supervision tasks), Institute of Chemistry - Physical Chemistry, Halle, Germany
Martin Luther University Halle-Wittenberg

Experience as post-doctoral researcher

07/2003 - University of Stuttgart, Institute of Physical Chemistry, Stuttgart, Ger-
08/2007 (post-doc in group of Prof. F. Giesselmann + teaching) many

01-05/2003 Technical University Berlin, Institute of Physical and Berlin, Germany
Theoretical Chemistry, (post-doc in group of Prof. G. Heppke)

10-12/2002 University of Colorado, Physics Department, Boulder (CO),
(post-doc in group of Prof. N. A. Clark) USA

Further international scientific research experience

05 / 2007	Visiting researcher, University of Washington, Department of Chemistry (Prof. Younan Xia)	Seattle (WA), USA
08-11/2001	Visiting researcher, Technical University Clausthal, Institute of Physical Chemistry, (Prof. Peter Zugenmaier)	Clausthal- Zellerfeld, Germany
09-12/1998	Visiting researcher, Technical University Berlin, Institute of Physical and Theoretical Chemistry (Prof. Gerd Heppke)	Berlin, Germany

Individual awards and fellowships (reverse chronological order)

26. March 2014	Honorary lecture "Vorländervorlesung" at the 41 st Topical Meeting on Liquid Crystals (organized by the German Liquid Crystal Society), Magdeburg, Germany
2011	Teaching Excellence Selection, Seoul National University, Graduate School of Convergence Science and Technology
Award date 25. Nov. 2004	Fellowship for cross-disciplinary micro- / nanotechnology post-doctoral research from the Knut & Alice Wallenberg Foundation (research period May 2005 - April 2007)
Award date 16. June 2003	Post-doctoral research fellowship from the Alexander von Humboldt-Foundation (research period July 2003 - November 2004)
Award date 12. July 2002	Post-doctoral research grant from the Swedish Research Council (Vetenskapsrådet)
Awarded in June 2001	Short-term scholarship for three-month research stay in Germany from DAAD (the German Academic Exchange Service)
Award date 5. June 2001	Recipient of the Golden Apple award for best teaching efforts of the year within the Engineering Physics Education, Chalmers University of Technology, elected by the students (shared with Rickard Jonsson). Motivation (my translation from Swedish): <i>For pedagogical efforts as problem solving class teacher. Jan Lagerwall speaks in a way that you understand. To every problem, small or large, there is a comprehensible answer, much thanks to his unusual ability to understand the students' questions and the difficulties behind. Jan gives breadth, depth as well as understanding when he teaches. Glances backwards in history and examples taken from reality lines his easy-to-grasp solutions. In addition, he accepts with pleasure, and with never-failing good mood and interest, all kinds of assignments related to the situation of the students. And the result always has that little extra to it.</i>

Publication record summary (see separate list for details)

- 75 research articles in international refereed journals. Total citation number 1867 (Web of Knowledge) / 2448 (Google Scholar), h-index 25 (Web of Knowledge) / 27 (Google Scholar), as of 15th October 2016.
- Two (invited) book reviews.
- One book (editor), nine book chapters and four theses.

Five most important original publications (*last three years*):

- ▶ Taming Liquid Crystal Self-Assembly: The Multifaceted Response of Nematic and Smectic Shells to Polymerization *Adv. Mater.*, DOI [10.1002/adma.201603158](https://doi.org/10.1002/adma.201603158) (2016), J. Noh, B. Henx, **J. L.**
- ▶ Non-electronic gas sensors from electrospun mats of liquid crystal core fibers for detecting volatile organic compounds at room temperature, *Liq. Cryst. (special 30th anniversary issue)*, DOI: [10.1080/02678292.2016.1212287](https://doi.org/10.1080/02678292.2016.1212287) (2016), C.G. Reyes, A. Sharma and **J. L.**
- ▶ High-fidelity spherical cholesteric liquid crystal Bragg reflectors generating unclonable patterns for secure authentication *Sci. Rep.*, **6**, #26840, DOI: [10.1038/srep26840](https://doi.org/10.1038/srep26840) (2016), Y. Geng, J. Noh, I. Drevensek-Olenik, R. Rupp, G. Lenzini, **J. L.**
- ▶ Influence of interface stabilizers and surrounding aqueous phases on nematic liquid crystal shells, *Soft Matter*, **12**, *2*, p. 367 (2016), JungHyun Noh, Kevin Reguengo da Sousa and **J. L.**
- ▶ Tunable Multicolored Patterns From Photonic Cross Communication Between Cholesteric Liquid Crystal Droplets, *J. Mater. Chem. C.*, **2**, *5*, pp. 806 - 810 (2014), JungHyun Noh, Hsin-Ling Liang, Irena Drevensek-Olenik and **J. L.**

Conference contributions

- 43 invited oral conference/symposium presentations (presenting author)
- 38 additional oral conference presentations (presenting author on 20),
- Seven invited tutorial/public lectures.

Invited oral research presentations at conferences and symposia

1. TBA
Jan P.F. Lagerwall
Conference on variational models of soft matter, Santiago di Chile, Chile, January 9 - 13, 2017
2. TBA
Jan P.F. Lagerwall
26th International Liquid Crystal Conference, Kent, USA, July 31 - August 5, 2016
3. TBA
Jan P.F. Lagerwall
Anisotropy and shape in biological materials workshop, Leiden, The Netherlands, May 23 - 27, 2016
4. TBA
Jan P.F. Lagerwall
Minisymposium about Molecular Engineering of Biosynthetic Hybrid Materials, Helsinki, Finland, May 12 - 13, 2016
5. *When coming home becomes visiting, and leaving becomes coming home: reflections on a globalized researcher's life*
Jan P.F. Lagerwall
115th General Assembly of the German Bunsen Society for Physical Chemistry (Bunsentagung), Rostock, Germany, May 5 - 7, 2016
6. *Towards control of helix pitch and orientation in dried cellulose nanocrystal films*
E-MRS 2015 Symposium Q: Colloidal Assembly of Functional Nanomaterials: from assembly routes to functional devices, Warsaw, Poland, 15 - 18 September, 2015
7. *Fluid and polymerized liquid crystalline shells*
Distinguished invited lecturer at the 17th Colloque sur les systèmes anisotropes auto-organisés, Autrans, France, 8-11 September 2015
8. *Interfaces that tune liquid crystals that tune interfaces: guiding self-assembly for applications in wearable technology and soft robotics*
Tailored materials interfaces, UniGR workshop at the Leibniz Institute for New Materials/University of Saarbrücken, Saarbrücken, Germany, June 29 - 30, 2015
9. *Curved, confined and colorful: liquid crystals in micron scale droplets, shells and fibers*
Gordon Research Conference on Liquid Crystals, Biddeford, Maine, USA, June 21 - 25, 2015
10. *Dynamic and complex optical patterns from colloids of cholesteric liquid crystal droplets*
JungHyun Noh, Irena Drevensek-Olenik, Jun Yamamoto and Jan P.F. Lagerwall
Emerging Liquid Crystal Technologies X, SPIE Photonics West, San Francisco, USA, February 7 - 12, 2015
11. *A new frontier for liquid crystal research: nematic, cholesteric and smectic shells*
Jan P.F. Lagerwall
Asian Liquid Crystal Conference 2015, Pusan, Korea, January 19 - 21, 2015
12. *With an open attitude, new doors open*
Honorary lecture "Vorländer-Vorlesung" at the 41st German Conference on Liquid Crystals
Magdeburg, Germany, March 25 - 27, 2014
13. *Liquid crystal bubbles*
2nd Hot Topics International Workshop on the mathematics of materials science: liquid crystal colloids, complex fluids and related topics, Daejeon, Korea, November 5 - 7, 2013
14. *Controlling and using topological defects in liquid crystal shells and droplets*
European Science Foundation Exploratory Workshop on "Defect-assembled soft matter for nanoscience and biotechnology", Rogaska Slatina, Slovenia, September 14 - 16, 2013
15. *Electrospun liquid crystal devices: flexible, stretchable, wearable*
13th International Meeting on Information Display (IMID) 2013, Daegu, Korea, August 26 - 29, 2013
16. *Liquid crystalline self-assembly of fractionated nanocrystalline cellulose*
The 15th Asian Chemical Congress, Singapore, August 19-23, 2013
17. *Science and applications of liquid crystal-functionalized electrospun polymer nano-/microfibers*
WCU-LG Display Nanomaterials and Device Symposium, Jeju, Korea, June 3rd - 5th, 2013.
18. *Long-range ordered composite films made via co-self-assembly of carbon nanotubes and cellulose nanocrystals*
International Symposium on Carbon Electronics, Seoul, Korea, May 6th - 7th, 2013.
19. *One-piece micropumps from liquid crystal elastomer core-shell particles*
2012 Fall Meeting of the Polymer Society of Korea, Changwon, South Korea, October 11th-12th 2012.
20. *Liquid crystal-functionalized electrospun microfibers for gas sensing textiles and other flexible devices*
Symposium on Flexible Liquid Crystal Devices, Kent State University, Kent (OH), USA, September 26th-27th 2012.
21. *Exploring and Applying Liquid Crystals in New Geometries Prepared by Microfluidics and Electrospinning*
Kavli Royal Society Centre two day focused conference on *New frontiers in anisotropic fluid-particle composites*, London, UK, June 28th-29th 2012.

22. *Towards functional textiles using electrospun polymer nano- and microfibers with responsive cores*
Electrospin 2012, Jeju, Korea, May 29th- June 1st 2012.
23. *Composite Materials Based on Self-Assembled Cellulose Nanocrystals*
International Symposium on Carbon Electronics, Seoul, Korea, May 28th - 29th, 2012.
24. *Optimized and micelle-free surfactant-stabilized CNT suspensions below the Krafft temperature*
ChemOnTubes 2012, Arcachon, France, April 1st-5th 2012.
25. *Tuning defect arrangements in nematic and smectic liquid crystalline shells*
Korean Liquid Crystal Conference 2012 (opening talk), Daegu, Korea, February 6th-7th 2012.
26. *Switchable and responsive liquid crystal-functionalized microfibers produced via coaxial electrospinning*
SPIE Photonics West on Emerging Liquid Crystal Technologies VII, San Francisco, USA, January 22nd-24th 2012.
27. *Dispersing nanoparticles in aqueous surfactant solutions below the Krafft temperature for optimized micelle-free suspensions with enhanced stability*
Soft and Hard Materials: a Symposium on Surface and Materials Chemistry, Lund, Sweden, Oct. 25th-27th, 2011.
28. *Electrospinning of core-sheath liquid crystal-polymer fibers*
Meeting of the Korean Polymer Society, Gwangju, Korea, October 6th - 7th, 2011.
29. *Coaxial electrospinning of fibers functionalized by liquid crystal cores*
WCU-LG Display Nanomaterials and Device Symposium, Jeju, Korea, June 8th - 10th, 2011.
30. *Improved Dispersion of Carbon Nanotubes Below the Surfactant Krafft Temperature*
International Symposium on Carbon Electronics, Seoul, Korea, May 9th - 12th, 2011.
31. *Exploring and Applying Liquid Crystals in New Geometries Prepared by Microfluidics and Electrospinning*
23rd International Liquid Crystal Conference, Krakow, Poland, July 11th - 16th, 2010.
32. *Liquid Crystals in Novel Geometries prepared by Microfluidics and Electrospinning*
9th Italian National Meeting on Liquid Crystals, Cetraro, Italy, July 4th - 7th, 2010.
33. *Functional Electrospun Liquid Crystal-Polymer Composite Fibers*
93rd Canadian Society for Chemistry Conference, Toronto, Ontario, Canada, May 29th - June 2nd, 2010.
34. *Functional Polymer Composite Fibers Produced by Electrospinning*
International Symposium on Carbon Electronics, Seoul, Korea, May 3rd - 4th, 2010.
35. *Carbon Nanotubes in Liquid Crystals*
Gordon Conference on Liquid Crystals, New London (NH), USA, June 14-19, 2009.
This was the opening talk of the conference.
36. *Macroscopic-Scale Carbon Nanotube Alignment via Self-Assembly in Hexagonal Columnar Liquid Crystals*
International Conference on Synthetic Metals (ICSM) 2008, Porto de Galinhas, Brazil, July 6 - 11, 2008
37. *Tiny Tubes in Liquid Crystals and Liquid Crystals in Tiny Tubes*
36th Topical Meeting of the German Liquid Crystal Society, Magdeburg, Germany, March 12-14, 2008.
38. *Anisotropic nanoparticles in anisotropic fluids: carbon nanotube-liquid crystal composites*
MC8: Advancing Materials by Chemical Design, Royal Society of Chemistry, London, UK, July 2 - 5, 2007
39. *Liquid crystalline carbon nanotube dispersions*
35th Topical Meeting of the German Liquid Crystal Society, Bayreuth, Germany, March 21-23, 2007.
40. *Dielectric spectroscopy investigations of carbon nanotube-doped liquid crystals*
Fourth Conference of the International Dielectric Society / Ninth International Conference on Dielectric and Related Phenomena, Poznan, Poland, September 3-7, 2006.

Memberships in scientific societies

- The American Chemical Society, since 2011
- The Korean Information Display & Liquid Crystal Society (*KIDS*), since 2011
- The German Physical Society (DPG), since 2009
- The German Chemical Society (GDCh), since 2008
- The Royal Society of Chemistry (RSC), since 2007
- The German Physical Chemistry Society (*Bunsengesellschaft*), since 2006
- The German Liquid Crystal Society, since 2006
- The European Physical Society, since 2005
- The Swedish Physical Society (*Svenska fysikersamfundet*), since 2005
- The International Liquid Crystal Society, since 1998

Supervised students (alumni)

At Seoul National University; Graduate School of Convergence Science & Technology; Suwon, Korea

Name	Degree	Defense date	Thesis title
Ms. JungHyun Noh	M.Sc.	06.12.2013	Two Novel Cholesteric Liquid Crystal Systems: Microfluidics-Produced Droplets and Self-Assembled Cellulose Nanocrystal Films

At Martin-Luther-Universität Halle-Wittenberg, Germany; Faculty of Natural Sciences II

Name	Degree	Defense date	Thesis title
Ms. Hsin-Ling Liang*	Ph.D.	25.09.2013	Microfluidic Produced Liquid Crystalline Shells: Self-assembled structures in nematic and smectic shells
Mr. Stefan Schymura	Ph.D.	04.07.2013	Liquid Crystalline Carbon Nanotube Suspensions: From Unique Challenges to Unique Properties
Ms. Eva Enz.	Ph.D.	16.04.2013	Electrospun Polymer-Liquid Crystal Composite Fibers
Ms. Sarah Dölle	Dipl.-Chem.	16.09.2009	Dispersion und Organisation von Kohlenstoffnanoröhrchen in lyotropen Flüssigkristallen - Vergleichende Untersuchungen zum Einfluss der Amphiphiltypen
Ms. Nicole Sonnenberger	B.Sc.	07/2009	Elektrospinning von Poly(vinylalkohol)- Fasern mit flüssigkristallinem Kern

**Shared supervision between me and Prof. Rudolf Zentel, Johannes-Gutenberg-University Mainz.*

On-going supervision of students

At University of Luxembourg

Doctoral students Advisor of Ms. JungHyun Noh since 15 April 2014.

At Seoul National University

Master students Advisor of Mr. Jong Hwan Lee since March 2012 and Ms. YooMee Kye since March 2013.

University teaching experience

Experimental Soft Matter Physics

2014	<ul style="list-style-type: none"> •Graduate level class of 3 students (reading course) •14 discussion meetings à 60 minutes •Course development •Examination (oral exam, 50 minute per student) 	University of Luxembourg
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Physics of Surfaces and Interfaces

2013	<ul style="list-style-type: none"> •Graduate level class of 5 students •28 lectures à 75 minutes •Course development •Examination (oral exam, 50 minute per student) 	SNU, GSCST, Suwon, Korea
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Statistical Physics & Thermodynamics

2013	<ul style="list-style-type: none"> •Graduate level class of 9 students •28 lectures à 75 minutes •Course development •Examination (oral exam, 50 minute per student) 	SNU, GSCST, Suwon, Korea
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Nanotechnology by Self-Assembly

2013	<ul style="list-style-type: none"> •Graduate level class of 8 students •28 lectures à 75 minutes •Course development •Examination (oral exam, 50 minute per student) 	SNU, GSCST, Suwon, Korea
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Seminars in Nano Science & Technology

2012	<ul style="list-style-type: none"> •Graduate level class of 13 students •The full course consisted of 13 lectures à150 minutes, one of which I gave (the rest were by invited guest speakers) •Course organization •Examination (12 quizzes and 2 seminars per student) 	SNU, GSCST, Suwon, Korea
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2011-2013	<p>Convergence Polymer Science</p> <ul style="list-style-type: none"> •Graduate level class of 10 students in 2013, 6 students in 2012 (another 2 follow the lectures without registering and taking the exam), 7 in 2011 •23 lectures à 75 minutes •2 lab exercises à 150 minutes •Course development •Examination (mid-term exam, home assignment and oral exam [50 minute per student]) 	SNU, GSCST, Suwon, Korea
2011-2012	<p>Soft Matter Nanotechnology</p> <ul style="list-style-type: none"> •Graduate level class of 5 students in 2012 and 5 students in 2011 •28 lectures à 75 minutes •Course development •Examination (written exam in 2011, oral exam [50 minute per student] in 2012) 	SNU, GSCST, Suwon, Korea
2011	<p>Nanotechnology by Self-Assembly</p> <ul style="list-style-type: none"> •Summer course (undergraduate level) for about 15 students •4 lectures à 75 minutes •Course development: 	SNU, GSCST, Suwon, Korea
2010-2012	<p>Colloid and Interface Science</p> <ul style="list-style-type: none"> •Graduate level class of 13 students in 2012, 3 students in 2011 and 5 students in 2011 •25 lectures à 75 minutes •1 lab exercises à 150 minutes •Course development •Examination (written exam in 2010, oral exam [50 minute per student] in 2011) 	SNU, GSCST, Suwon, Korea
2009 - 2010	<p>Physical Chemistry for Physicists: Colloid & Interface Science</p> <ul style="list-style-type: none"> •Undergraduate level class of about 10 students, course shared 50/50 with Prof. A. Blume •18 lectures à 45 minutes •Examination (oral exam [30 minute per student], together with Prof. A. Blume) 	M.L.U. Halle-Wittenberg, Halle, Germany
2007 - 2009	<p>Guest lecturer, undergraduate level course Modern Developments in Chemistry</p> <ul style="list-style-type: none"> •Class of about 40 students •One 90 minute lecture each year 	M.L.U. Halle-Wittenberg, Halle, Germany
2007 - 2009	<p>Liquid Crystals 1</p> <ul style="list-style-type: none"> •Graduate level class of about 5 students •5 lectures à 90 minutes in 2007-2008 class, 10 lectures à 90 minutes in 2008-2009 class •Partial course development in 2007-2008 (shared with Prof. W. Weissflog, full course development in 2008-2009) •Examination (90 minute oral examination in group) 	M.L.U. Halle-Wittenberg, Halle, Germany
2006	<p>Physical Chemistry V: Liquid Crystals</p> <ul style="list-style-type: none"> •Graduate level class of about 20 students •13 lectures à 90 minutes •Course development 	University of Stuttgart, Germany
2005 - 2006	<p>Physical Chemistry for students in Food Technology and Nutritional Sciences</p> <ul style="list-style-type: none"> •Undergraduate level class of about 80 students •In charge of laboratory experiments •Examination (written exam) 	University of Stuttgart, Germany
2000	<p>Thermodynamics & Statistical Physics</p> <ul style="list-style-type: none"> •Problem solving class (undergraduate level) of about 50 students •17 instructor sessions à 90 minutes •Assistant in exam correction and grading •<i>I was awarded the pedagogical prize of the department for this class</i> 	Chalmers U.T. Göteborg, Sweden
1998 - 2001	<p>Lab assistant in courses on optics, electronic measurement techniques and liquid crystals; development of new/updated experiments.</p>	Chalmers U.T. Göteborg, Sweden

Ph.D. and M.Sc. course examination assignments

28.06.2013	Reviewer and member of M.Sc. examination committee for Mr. Dong-Hun Shin, Seoul National University (Korea), Graduate School of Convergence Science & Technology
15.06.2012	Reviewer and chairman of M.Sc. examination committee for Ms. Hanju Jo, Seoul National University (Korea), Graduate School of Convergence Science & Technology
22.06.2011	Reviewer and member of Ph.D. examination committee for Mr. Seungjoo Park, Seoul National University (Korea), Dept. of Physics
14.06.2011	Reviewer and chairman of M.Sc. examination committee for Mr. Junebum Shim, Seoul National University (Korea), Dept. of Physics
07/2009	External referee of Ph.D. thesis of Mr. Frank Müller, University of Magdeburg (Germany), Dept. of Physics

Further assignments and activities related to academic research & teaching

2011 - 2014	Member of the International Advisory Committee of the 24 th and 25 th International Liquid Crystal Conference (current web site: www.ilcc2014.com).	
2011 - 2015	Member of international Scientific Committee of the 15 th and 13 th International Conference on Ferroelectric Liquid Crystals (Niagara Falls, USA, 2011, and Prague, Czech Republic, 2015)	
06-11/ 2013	Organization of TEDxSNUSuwon with theme 'Convergence', gathering nine hand-picked speakers and two performers for an event intended for 100 persons. Together with Mathew Schwartz, AICT. Event date: November 16 th , 2013	SNU
Since 2005	Invited tutorial lecturer at several workshops and conferences, including the International Liquid Crystal Conference (twice), in Europe, America and Asia.	
2011-2012	One of eight members in the Seoul National University Globalization Committee, a consultant body for the university president and executive officers	SNU
2011	Co-chair of 'Research committee' of SNU International Faculty	SNU
2010	Invited to become member of the Physical Sciences Working Group of the European Space Agency (had to decline due to move to Korea)	
since 2008	Referee of scientific research grant applications (ACS Petroleum Research Fund, Czech Science Foundation, Netherlands Organisation for Scientific Research, Canada Foundation for Innovation, European Space Agency, Science Foundation Ireland, Investitionsbank Sachsen-Anhalt)	
since 2008	Board member of the International Liquid Crystal Society, in charge of the society web site (www.ilcsoc.org).	
since 2001	Regularly consulted as manuscript referee (occasionally also book reviewer) by international physics, chemistry and materials science journals, e.g. <i>Soft Matter</i> , <i>Adv. Mater.</i> & <i>Adv. Funct. Mater.</i> , <i>J. Mater. Chem.</i> , <i>Phys. Rev.</i> , <i>Eur. Phys. J.</i> , <i>Optics Express</i> , <i>J. Am. Chem. Soc.</i> , <i>Angew. Chemie</i> , <i>Nanotechnology</i> , <i>ChemPhysChem</i> , <i>Liq. Cryst.</i> , <i>Acta Biomater.</i> , <i>Colloid Polym. Sci.</i>	
04/2008 -05/2009	Organizer of European Science Foundation workshop <i>Frontiers in European Research on Liquid Crystalline Soft Matter</i> , LC Lab Bandol, May 27-29, 2009 (www.workshop.lcsoftmatter.com)	Bandol, France
2006	Co-organizer of and lecturer at the Summer School <i>Dynamics—Moving Matter on Different Time Scales</i> of the International Max Planck Research School for Advanced Materials, April and October 2006	Stuttgart, Germany
2006 - 2009	Co-organizer of and lecturer at the international <i>Bandol Summer School on Liquid Crystals</i> , organized yearly from 2006 to 2009	Bandol, France
04-09/2004	Co-organizer of international workshop <i>Current Topics in Smectic Liquid Crystal Research</i> , University of Stuttgart, September 19 - 22, 2004	Stuttgart, Germany
12/2003 - 05/2004	Organizer of international workshop <i>Liquid Crystal Research and Applications for the New Century</i> , LC Lab Bandol, May 28-30, 2004	Bandol, France
1999 - 2001	Organizer of workshops and conferences (~100-200 participants) related to scientific and pedagogical activities at Chalmers University of Technology	Göteborg, Sweden

General skills and experience

<i>Languages</i>	Swedish (mother tongue), English and German (fluent), French (very good), Italian (good passive skills)
<i>Computer knowledge</i>	Macintosh and iOS (expert), Windows (good knowledge), Unix (basic). Well experienced in web site design. Good to very good knowledge in and experience with several scientific software tools (e.g. LaTeX, LabView, ProFit).
<i>Work in clean room environment</i>	Good experience of LCD-type cell manufacturing in class 100 clean room (photolithography, spin coating of alignment agents, assembly of finished product).

Basic education and training

08/1986 - 06/1989	Scientific track high school education, Göteborgs Högre Samskola	Göteborg, Sweden
09/1991 - 04/1997	Engineering Physics education (M.Sc.), Chalmers U. of Technology	Göteborg, Sweden
07-08/1993	Trainee at industrial research and development lab, Asulab S.A. (R & D lab of the 'Swatch Group')	Neuchâtel, Switzerland
09/1994 - 06/1995	Courses at humanistic faculties, Gothenburg university (philosophy, religion and history of economics)	Göteborg, Sweden
10/1997 - 05/2002	Doctoral studies, Chalmers University of Technology	Göteborg, Sweden

Additional education in teaching and supervision

March / June 2006	<i>Fit for teaching - basics of university education didactics</i> , 32 lecture hours. Organized by the Center for university education didactics in Baden-Württemberg, Stuttgart, Germany.
May 2006	<i>Active Learning with Large Groups of Students</i> , 16 lecture hours. Organized by the Center for university education didactics in Baden-Württemberg, Stuttgart, Germany.
March-April 2006	<i>Supervision of Research: Principles, Models and Issues</i> , 32 lecture hours. Organized by Chalmers University of Technology, Göteborg, Sweden.
November 2007	<i>Problem-based and Project-based Learning: A Comparison</i> , 16 lecture hours. Organized by the Center for university education didactics in Baden-Württemberg, Stuttgart, Germany.
2011 - 2012	Several workshops for foreign professors teaching Korean students at SNU. Organized by the Center for Teaching and Learning, SNU, Seoul, Korea.

Previous employments etc. other than those mentioned above

10/1989 - 06/1990	Hospital orderly, Svalebo sjukhem	Göteborg, Sweden
10/1990 - 10/1991	Military service (Meteorologist's assistant), F4 air force base	Östersund, Sweden
summers 1994-1996	DJ, 'Sommarklubben', Chalmers University of Technology	Göteborg, Sweden
10/1997 - 09/2002	Doctoral student, Chalmers University of Technology	Göteborg, Sweden
12/2004 - 04/2005	Research associate	Stuttgart, Germany

Research profile

•Experienced and globalised

15+ years of international research on a wide range of soft matter science topics at top academic institutions in 4 countries (Sweden, USA, Germany and South Korea) on 3 continents

•Interdisciplinary

M.Sc. in physics, Ph.D. in materials science, post-docs mainly at physical chemistry departments; now assistant professor at an institution for convergence science (the preferred Korean term for interdisciplinary research) at Korea's prime university. Research activities span from physics to chemistry with particular focus on self-assembly and nanotechnology, with good openings for extensions to biotechnology.

•Innovative, explorative and independent

initiated/co-initiated several research projects with scopes well outside the realm of my Ph.D work:

- microfluidics-prepared multiple emulsions with liquid crystalline shells, providing a new fascinating morphology for studying soft matter structure formation via self-assembly, and also holding promise for applications in metamaterials generation via colloid crystallisation or in soft micro actuators
- electrospinning of core-sheath micro-/nanofibres with encapsulated liquid crystals or colloidal suspensions; the complex fluid cores give the polymer sheath fibres novel functionality and responsiveness, with application potential in sensors, actuators and energy converters, and the very strong cylindrical confinement has interesting consequences on the liquid crystal phase development.
- alignment of nanorods and nanotubes in lyotropic liquid crystal hosts, allowing such high loading of e.g. carbon nanotubes without loss of orientational order that the suspension turns into a fluid linear polariser.

•Modern soft matter scientist

My activities today encompass many aspects of soft matter and nano-/microtechnology research in combination with the liquid crystal science that is still at the core of my interests, focusing on the physics, chemistry and applications of colloids, liquid crystals and polymers with self-assembled nano- to macroscale ordering. In the near future I plan to:

- further develop the work on microfluidics-produced colloidal shells and the study of different liquid crystal phases in shells of varying diameters, thickness and boundary conditions, as well as developing hybrid molecules for giving the shells interaction capacity,
- further develop the work on electrospun polymer fibres with encapsulated complex fluids, primarily towards usages in wearable technology/smart textiles and for piezoelectric mechano-electrical energy converters,
- explore liquid crystal elastomers in shell and fibre morphologies for actuators based on different liquid crystal phases,
- develop my latest research thrust on long-range self-assembly of cellulose nanocrystals, a class of anisotropic chiral nanoparticle that is currently receiving greatly increasing attention due to its attractive optical and mechanical properties in combination with its sustainable production from a renewable resource. We will study the behaviour in suspension as well as the solidification of the systems, and we will functionalise them with complementary nanoparticles like semiconducting nanorods or carbon nanotubes

Further ahead I envisage engaging in research closer to biology, particularly in self-assembly of linear protein assemblies like actin, microtubuli and amyloid fibrils, as well as the liquid crystal phase behaviour of lipid membranes, primarily the physics of the liquid ordered phase occurring in lipid rafts.

Main research methods

- Standard methods for characterization of anisotropic soft matter and colloids: light microscopy (polarizing, dark field, differential interference contrast), calorimetry (DSC), mixture studies, light and x-ray scattering
- methods for preparing, stabilizing and fractionating nanoparticle dispersions and complex emulsions (surfactant-based suspension, ultrasonication, centrifugation, microfluidics etc.)
- electrospinning
- dielectric spectroscopy
- polarized Raman and UV/VIS absorption spectroscopy
- high-speed photography
- optical and electrooptical methods for investigating the order and dynamics of liquid crystals

Main scientific research achievements

- Explanation of mysterious phase sequence and helix pitch behavior of cellulose nanocrystal suspensions, as a result of competition between glass formation and liquid crystal formation (*collaboration with Stockholm U.*),
- first realization via microfluidic technique of micron scale liquid crystal elastomer shell actuators and demonstration of their potential as micropumps (*collaboration with U. Mainz*),
- first study and analysis of the nematic-smectic phase transitions in liquid crystalline shells with uniform and hybrid boundary conditions,
- first demonstrations of coaxial electrospinning of core-shell polymer micro- and nanofibers with encapsulated nematic, smectic and chiral nematic liquid crystals (*collaboration with U. Washington*),
- first tailor-designed molecules for stabilizing carbon nanotube-in-thermotropic liquid crystal suspensions (*collaboration with U. Halle-Wittenberg*),
- successful demonstration of simultaneous dispersion and alignment of carbon nanotubes in lyotropic liquid crystal phases (*collaboration with the Max Planck Institute for Solid State Research, Stuttgart*),
- important contributions to the understanding of 'de Vries-type' phase transitions, allowing, thanks to its order-disorder transition nature, the applicationally very attractive but unusual phenomenon of a smectic tilting transition without layer shrinkage (*collaboration with U. Stuttgart and U. Strathclyde*),

- discovery of a new type of smectic–nematic phase transition in a system with chiral dimeric mesogens, connected to a molecular conformational change and being electric field-inducible (*collaboration with U. Colorado and Displaytech*),
- explanation of the antiferroelectric switching behavior of the SmC_α^* liquid crystal phase as a result of its extremely short-pitch helically modulated structure,
- the discovery that the ‘frustrated’ liquid crystal phases SmC_β^* and SmC_γ^* can be induced by mixing compounds exhibiting the syn- and anticlinic phases SmC^* and SmC_a^* , respectively (*collaboration with U. Stuttgart*).

Teaching, supervising and referee experience

- Rich experience as lecturer, course developer, problem solving class teacher and lab supervisor
- Experience as reviewer of M.Sc. and Ph.D. theses
- Co-organizer of and lecturer at several international thematic summer schools/pre-conference tutorials
- Main advisor of five doctoral students, four master/diploma students and one bachelor student
- Co-advisor of several diploma and doctoral students

Public outreach activities

- Strong involvement in multiple public outreach activities with varying audiences (TEDx events, science festival, ‘open university’, school class visits, ...) in Korea, Sweden and Germany
- Since end of 2008 member of the publication committee of the International Liquid Crystal Society, in charge of the society web site (www.ilcsoc.org) which I gave a total rebirth with new design, functionality and numerous new resources.
- Creation of web-tutorial on liquid crystals and their applications (<http://www.mc2.chalmers.se/mc2/pl/lc/>)
- Creation of video tutorial with spoken comments on liquid crystal dielectric spectroscopy, freely available online at <http://www.lcsoftmatter.com>

Non-professional interests

Music, art, cinema, theater and dance, international cultures, computer programming, gastronomy (in particular the Italian cuisine), nature and wildlife