

## Prof. Dr. habil Jan Peter Felix Lagerwall

Work address Physics and Materials Science Research Unit, Université du Luxembourg  
Campus Limpertsberg, 162a, avenue de la Faïencerie, BS 1.15a  
L-1511 Luxembourg

Telephone +352 46 66 44 6219 E-mail [Jan.Lagerwall@lcsoftmatter.com](mailto:Jan.Lagerwall@lcsoftmatter.com)  
[Jan.Lagerwall@uni.lu](mailto:Jan.Lagerwall@uni.lu)

Web page [www.lcsoftmatter.com](http://www.lcsoftmatter.com)

Researcher ID [A-2090-2009](https://orcid.org/0000-0001-9753-1147) Orcid ID [0000-0001-9753-1147](https://orcid.org/0000-0001-9753-1147) Scopus Author ID [6602191293](https://orcid.org/0000-0001-9753-1147)



## Key qualifications

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

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

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

Habil.  
(Physical Chemistry) 14.12.2010 Martin-Luther-Universität Halle-Wittenberg,  
Faculty of Natural Sciences II - Chemistry, Physics and Mathematics, Halle, Germany  
Thesis: *Three facets of modern liquid crystal science*

## Current position

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

## 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 supervision tasks), Halle, Germany  
08/2010 Institute of Chemistry - Physical Chemistry, Martin Luther University Halle-Wittenberg

## Experience as post-doctoral researcher

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

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

10-12/2002 University of Colorado, Physics Department, (post-doc in group of Prof. N. A. Clark) Boulder (CO), 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, Clausthal-Zellerfeld, Germany  
Institute of Physical Chemistry, (Prof. Peter Zugenmaier)

09-12/1998 Visiting researcher, Technical University Berlin, Berlin, Germany  
Institute of Physical and Theoretical Chemistry (Prof. Gerd Heppke)

## Individual awards and fellowships (reverse chronological order)

26. March 2014 Honorary lecture "Vorländervorlesung" at the 41st 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.

## Current third party-funded research projects in the group

Period	Budget	Role	Project title	Grant type/purpose	Funding source
04.2015 - 03.2020	2M€	PI	Intelligent Non-woven Textiles and Elastomeric Responsive materials by Advancing liquid Crystal Technology	Consolidator Grant	European Research Council (ERC)
03.2015 - 02.2017	114k€	Advisor	Dielectric spectroscopy study on nematic gold nanoparticle dispersions	AFR post-doc grant (for Dr. M. Urbanski)	Fonds National de la Recherche Luxembourg (FNR)
02.2015 - 01.2018	627k€	PI	Materials Innovation with Self-Ordered NanoCellulose (joint project with T. Schilling, UL)	CORE thematic research program	Fonds National de la Recherche Luxembourg (FNR)
04.2014 - 03.2017	120k€	Advisor	Ultrathin Liquid-crystal Shells for smart COLloids	AFR Ph.D. grant (for Ms. J. Noh)	Fonds National de la Recherche Luxembourg (FNR)

## Current university-funded research projects

Period	Budget	Role	Project title	Grant type/purpose	Funding source
04.2015 - 03.2018	340k€	PI	Unclonable Networks for Identification using Cholesteric Emulsions (joint project with G. Lenzini & P. Ryan UL)	IRP-PUL internal research grant	University of Luxembourg
07.2014 - 07.2016	15k€	PI	Start-up grant	Start-up grant for new professors	University of Luxembourg

## Three most important past research projects

Period	Budget	Role	Project title	Grant type/purpose	Funding source
05.2011 - 04.2014	180 Mwon	PI	Colloidal Self-Assembly with Microfluidics-Produced Liquid Crystal Shells	Regular project grant scheme	Korean National Research Foundation (NRF)
11.2010 - 04.2012	40 Mwon	PI	Microfluidic production of responsive liquid crystalline shells and their investigation	Project grant scheme for new professors	Advanced Institute of Convergence Science, Suwon, Korea
09.2007 - 09.2010	180 k€	PI	Start-up grant	Junior research group starting grant	Excellence-Cluster Nanostrukturierte Materialien

## Publication record summary (see [www.lcsoftmatter.com](http://www.lcsoftmatter.com) for all details)

- 64 research articles in international refereed journals (one single-author paper, first author on 25 multiple-author papers of which three are invited reviews and one an invited highlight article, senior author on 22 papers. Total citation number (ISI): 1372; h-index (ISI): 21 (as of 17<sup>th</sup> of March 2015)
- Two (invited) book reviews.
- Two (invited) books in preparation (one editor, one author), six (invited) book chapters and four theses.
- One patent (Korea)

Five most recent publications (journal name hyperlinked to article web site):

- ▶ *Influence of wetting on morphology and core content in electrospun core-sheath fibers* [ACS Appl. Mater. Interfaces](#), **6**, 16441–16447 (2014), Dae Kyom Kim and J. L.
- ▶ *Macroscopic control of helix orientation in films dried from cholesteric liquid crystalline cellulose nanocrystal suspensions*, [ChemPhysChem](#), DOI: 10.1002/cphc.201400062 (2014), Ji Hyun Park, JungHyun Noh, Christina Schütz, German Salazar-Alvarez, Giusy Scalia, Lennart Bergström, 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.
- ▶ *Cellulose nanocrystal-based materials: from liquid crystal self-assembly and glass formation to multifunctional thin films*, [NPG Asia Materials](#), **6**, e80, doi:10.1038/am.2013.69 (2014), open access, J. L., Christina Schütz, Michaela Salajkova, JungHyun Noh, Ji Hyun Park, Giusy Scalia and Lennart Bergström.
- ▶ *Liquid Crystal Functionalization of Electrospun Polymer Fibers (Perspective article)* [J. Polym. Sci. B: Polym. Phys.](#), **51**, 11, pp. 855-867 (2013), Dae Kyom Kim, Minsik Hwang, J. L.

Five other key publications during the last five years (journal name hyperlinked to article web site):

- ▶ *A new era for liquid crystal research: applications of liquid crystals in soft matter nano-, bio- and microtechnology* [Curr. Appl. Phys.](#), **12**, 9, pp. 1387–1412 (2012), Jan P. F. Lagerwall and Giusy Scalia (Review article; 4th most downloaded article among all Elsevier journals in the field of Condensed Matter Physics, and most downloaded article in *Curr. Appl. Phys.*, in the first half of 2013. Current citation count: 69)
- ▶ *One-piece micropumps from liquid crystalline core-shell particles* [Nat. Commun.](#), **3**, DOI: 10.1038/ncomms2193 (2012) E.-K. Fleischmann, H.-L. Liang, N. Kapernaum, F. Giesselmann, J. L. and Rudolf Zentel. Current citation count: 18

- ▶ Towards tunable defect arrangements in smectic liquid crystal shells utilizing the nematic-smectic transition in hybrid-aligned geometries (Featured on the journal cover). *Current citation count: 6*  
*Soft Matter*, 8, 20, 5443-5450 (2012), Hsin-Ling Liang, Rudolf Zentel, Per Rudquist and Jan Lagerwall.
- ▶ *Nematic-smectic transition under confinement in liquid crystalline colloidal shells*  
*Phys. Rev. Lett.*, 106, 24, 247801 (2011), H.-L. Liang, S. Schymura, P. Rudquist and J. L. *Current citation count: 25*
- ▶ Electrospun microfibrils with temperature sensitive iridescence from encapsulated cholesteric liquid crystal  
*J. Mater. Chem.*, 20, 33, pp. 6866-6872 (2010), Eva Enz and J. L. *Current citation count: 15*

### Conference contributions (summary)

- 32 invited oral conference/symposium presentations (presenting author), including two at Gordon Research Conferences.
- 34 additional oral conference presentations (presenting author on 18),
- Six invited tutorial lectures.

### Academic teaching and advising experience (summary)

- Developed and taught 10 full graduate courses (lectures and exams) in Germany, Korea and Luxembourg, and 1 undergraduate course (lectures and exam) in Luxembourg.
- Shared responsibility for 3 undergraduate courses in Sweden and Germany (exercises, lab experiment development and lectures, respectively).
- Lab assistant in multiple undergraduate courses in Sweden.
- Invited lecturer at multiple summer schools and conference tutorials
- Brought 3 doctoral students to their Ph.D. title and 3 M.Sc. and 2 B.Sc. students to their respective titles.

### Commissions of trust

External expert reviewer of applications for professorship promotion

Representative of the Physics & Materials Science Research Unit, University of Luxembourg, in the working group for the introduction of university-wide doctoral schools

Member of the International Advisory Committee of the International Liquid Crystal Conference series (current web site: [www.ilcc2016.com](http://www.ilcc2016.com)).

Member of international Scientific Committee of the 15th and 13th International Conference on Ferroelectric Liquid Crystals (Niagara Falls, USA, 2011, and Prague, Czech Republic, 2015)

One of eight members in the Seoul National University Globalization Committee, a consultant body for the university president and executive officers SNU

Co-chair of 'Research committee' of SNU International Faculty SNU

Referee of research grant applications for research funding agencies in multiple countries.

Board member of the International Liquid Crystal Society, in charge of the society web site ([www.ilcsoc.org](http://www.ilcsoc.org)).

Regularly consulted as manuscript referee (occasionally also book reviewer) by top international physics, chemistry and materials science journals.

### 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

### Public outreach and related activities (summary)

- Organizer of multiple workshops and meetings for audiences ranging from the general public (e.g. TEDxSNUSuwon in 2013), via university students to professors (e.g. a European Research Foundation-funded Exploratory Workshop in 2009)
- Developed several publicly available, free-of-charge, web-based resources on liquid crystals and liquid crystal research.
- Organizer of science festival exhibition and "open university" experiments for the general public and school children, in Sweden and in Germany,