Compact Curriculum Vitae of Prof. Dr. habil Jan Peter Felix Lagerwall

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Researcher ID	A-2090-2009	*Orcid ID*	0000-0001-9753-1147	*Scopus Author ID*	6602191293

Key qualifications

M.Sc. (Engineering physics)	11.04.1997	Chalmers University of Technology, Department of Physics, 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, Department of Physics and Materials Science	Luxembourg

Previous group leader positions

03/2013 - 02/2014	Associate professor (tenure track), Seoul National University, Graduate School of Convergence Science & Technology (GSCST)	Suwon, South Korea
09/2010 - 02/2013	Assistant professor (tenure track), Seoul National University, GSCST	Suwon, South Korea
09/2007 - 08/2010	Junior research group leader (with research, teaching and student supervision tasks), Institute of Chemistry - Physical Chemistry, Martin Luther University Halle-Wittenberg	Halle, Germany

Experience as post-doctoral researcher

07/2003 - 08/2007	University of Stuttgart, Institute of Physical Chemistry, (post-doc in group of Prof. F. Giesselmann + teaching)	Stuttgart, Germany
01-05/2003	Technical University Berlin, Institute of Physical and Theoretical Chemistry, (post-doc in group of Prof. G. Heppke)	Berlin, Germany
10-12/2002	University of Colorado, Physics Department,(post-doc in group of Prof. N. A. Clark)	Boulder (CO), USA

Main individual awards and fellowships (reverse chronological order)

Award date 16.10.2024	European Research Council (ERC) Synergy grant for 6-year project ALCEMIST. Coordinator role.
Award date 01.02.2022	European Research Council (ERC) Proof of Concept grant for 1.5-year project REVEAL.
Award date 12.04.2019	European Research Council (ERC) Proof of Concept grant for 1.5-year project VALIDATE.
Award date 23.01.2015	European Research Council (ERC) Consolidator grant (panel PE8) for 5-year project INTERACT.
26.03.2014	Honorary lecture "Vorländervorlesung" at the 41st Topical Meeting on Liquid Crystals (organized by the German Liquid Crystal Society), Magdeburg, Germany
Award date 25.11.2004	Fellowship for cross-disciplinary micro- / nanotechnology post-doctoral research from the **Knut & Alice Wallenberg Foundation** (research period May 2005 - April 2007)
Award date 16.06.2003	Post-doctoral research fellowship from the **Alexander von Humboldt-Foundation** (research period July 2003 - November 2004)
Award date 05.06.2001	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.

Five most important running third party-funded research projects in the group

Period	*Budget*	*Role*	*Project title*	*Grant type/purpose*	*Funding source*
04.2025-03.2029	460k€	Co-PI	*BriCE: Concrete Bridge Spatially-Distributed Monitoring Through Chromatic Liquid Crystal Elastomers*	AUDACITY scheme	UL Institute of Advanced Studies
02.2025 - 01.2031	3.36M€ (UL part)	PI, coordinator	ALCEMIST: Atypical Liquid Crystal Elastomers: from Materials Innovation to Scalable processing and Transformative applications	Synergy Grant, co-ordinator role	European Research Council (ERC)
03.2024 - 02.2027	352k€ (UL part)	Lead PI	SHADOW: Shaping domain wall and defect configurations of ferroelectric nematic liquid crystals	FNR/ARRS Weave	Fonds National de la Recherche Luxembourg (FNR)
01.2024-12.2026	400k€	Co-PI	InvisiMark: Unclonable Invisible Optical Markers For Defence Applications	FNR Defense	Fonds National de la Recherche Luxembourg (FNR)
09.2023 - 08.2026	796k€	Co-PI	*COSAMOS*: Control Of a Soft Aerial Manipulator with cholesteric liquid crystal elastomer-based Optical Strain Sensing	CORE thematic research program	Fonds National de la Recherche Luxembourg (FNR)

Five most important research projects concluded in the last five years

Period	*Budget*	*Role*	*Project title*	*Grant type/purpose*	*Funding source*
07.2022 - 06.2025	556k €	PI	BIOFLICS: BIO-sensing the Frugal way with LIquid Crystal Spheres	CORE thematic research program	Fonds National de la Recherche Luxembourg (FNR)

Period	*Budget*	*Role*	*Project title*	*Grant type/purpose*	*Funding source*
09.2021 - 08.2025	400k €	Main PI	TRANSCEND: TRansforming Autonomous Navigation, Swarm robotics and Construction by ENcoding Data into surfaces	AUDACITY scheme	UL Institute of Advanced Studies
09.2022 - 02.2024	150k€	PI	REVEAL: REVEALing complex strain patterns and dangerous loads using cholesteric liquid crystal elastomers	Proof of Concept (PoC) Grant	European Research Council (ERC)
04.2019– 03.2022	319k$	PI	LAB'RINTH: Liquid crystal-Bead Reflectors Illuminating a Needle in The Haystack	Long Range BAA	Office of Naval Research Global
09.2019 - 06.2021	150k€	PI	VALIDATE: Verifying Authenticity with Liquid crystal-Derived Anti Theft Encoding	Proof of Concept (PoC) Grant	European Research Council (ERC)

Supervised doctoral students

Name	*Start date*	*Defense date*	*Dissertation title*
Mr. Dr. Nikolay Popov	01.07.2021	29.08.2025	Impact of nonionic stabilizers and ionic solutes on liquid crystal shell stability and defect configuration
Ms. Dr. Deniz Işınsu Avşar	01.09.2021	27.08.2025	Encoding Information as Unobtrusive Graphical Patterns Using Cholesteric Spherical Reflectors: From Optical and Materials Challenges to Application in Robotics
Ms. Dr. Xu Ma	01.09.2021	25.08.2025	Cholesteric liquid crystal spheres for visible and infrared operation: from tunable configurations to continuous production
Ms. Dr. Najiya	15.01.2021	10.03.2025	Fabrication and Tailoring of Liquid Crystalline Elastomer Tubes: Toward Bio-Compatible Microactuators for Organoid Cultures
Mr. Dr. Shameek Vats	01.07.2017	08.10.2021	Spinning Functional Fibers : An Interplay of Rheology, Miscibility & Crosslinking
Ms. Dr. Anjali Sharma	01.06.2017	28.05.2021	Liquid Crystal Shells: from Physics Mysteries, via Chemistry Challenges, to Biosensing Opportunities
Mr. Dr. Lawrence Honaker	15.10.2015	11.10.2019	Liquid metals and liquid crystals subject to flow: from fundamental fluid physics to functional fibers.
Ms. Dr. Camila Honorato-Rios	15.05.2015	03.05.2019	Cholesteric liquid crystal formation in suspensions of cellulose nanocrystals.
Ms. Dr. Catherine Reyes	15.01.2015	15.02.2019	Confined in a fiber: Realizing flexible gas sensors by electrospinning liquid crystals.
Ms. Dr. JungHyun Noh	15.04.2014	23.03.2018	*Tuning Self-Assembly in Liquid Crystal Shells: From Interfacial- to Polymer-Stabilization.*
Ms. Dr. Hsin-Ling Liang*	01.10.2009	25.09.2013	*Microfluidic Produced Liquid Crystalline Shells: Self-assembled structures in nematic and smectic shells*
Mr. Dr. Stefan Schymura	01.12.2007	04.07.2013	*Liquid Crystalline Carbon Nanotube Suspensions: From Unique Challenges to Unique Properties*
Ms. Dr. Eva Enz.	01.10.2007	16.04.2013	Electrospun Polymer-Liquid Crystal Composite Fibers

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

Doctoral students currently under supervision

Name	*Start date*	*Project title/topic*	*Framework*
Ms. Miriam Fischer	01.11.2025	Programming of liquid crystal elastomers by complex flow patterning of precursor liquids	Funded by ERC SyG project ALCEMIST
Mr. Churchill Agoni	01.02.2025	Studies shells of ferroelectric nematic and ferroelectric cholesteric liquid crystals with focus on the topological defect configurations and tunable structural color.	Funded by FNR WEAVE project SHADOW.
Mr. Yosuke Pestana-Nakamura	01.09.2024	Studies cholesteric liquid crystal elastomer sheets in different shapes and explores their application in soft robotic strain sensors.	Funded by FNR CORE project COSAMOS.

Publication record summary (see *https://orcid.org/0000-0001-9753-1147 for all details*)

- 126 refereed research articles published in international scientific journals. Total citation number 9500 (Google Scholar) / 7011 (WoS), h-index 50 (Google Scholar) / 43 (Web of Science), as of January 8th 2026.
- One edited book, nine book chapters and four theses. Two (invited) book reviews.
- Five approved patents (EPA, Korea) and one in review.

Five most recent publications (reverse chronological order, title hyperlinked to article web site, citation number from journal website):

1. *Circularly polarized structural color pigments tunable across the full visible spectrum*
   Deniz Işınsu Avşar and Jan P. F. Lagerwall.
   Adv. Opt. Mater., in press (2026).
2. *Optical crack detection and assessment using cholesteric liquid crystal elastomers*
   Tarik Camo,, Rijeesh Kizhakidathazhath, Danièle Waldmann-Diederich and Jan PF Lagerwall
   Struct. Health Monitoring, **25**, *1*, 537-549 (2026)
3. *Oligomer-Derived Photoresponsive Liquid Crystal Elastomers with Biocompatible Operating Temperature*
   Najiya Najiya and Jan P. F. Lagerwall.
   Adv. Opt. Mater., in press (2025). **13**, *16*, 2500160 (2025).
4. *Arbitrary and Active Colouring of Solar Cells with Negligible Loss of Efficiency*
   Yan-Song Zhang, Hasan Arif Yetkin, Hakam Agha, Sevan Gharabeiki, Rijeesh Kizhakidathazhath, Lena Merges, Ricardo G. Poeira, Jan P.F. Lagerwall and Phillip J. Dale, *Energy & Env. Sci.*, **18**, 884-896 (2025)

5. *How smectic-A and smectic-C liquid crystals resolve confinement-induced frustration in spherical shells*
   Anjali Sharma, Mitchell Magrini, Yucen Han, David M. Walba, Apala Majumdar and Jan P. F. Lagerwall.
   Soft Matter, **20**, 9586-9596 (2024).

Ten additional most important publications (reverse chronological order, title hyperlinked, citations as of 8th of January 2026):

1. *Tunable templating of photonic microparticles via liquid crystal order-guided adsorption of amphiphilic polymers in emulsions* (open access, 12 citations)
   Xu Ma, Yucen Han, Yan-Song Zhang, Yong Geng, Apala Majumdar and Jan P. F. Lagerwall,
   Nat. Commun., 15, 1404 (2024).
2. *Robust cholesteric liquid crystal elastomer fibres for mechanochromic textiles* (open access, 212 citations)
   Yong Geng, Rijeesh Kizhakidathazhath, and Jan P. F. Lagerwall,
   Nat. Mater., **21**, 1441 (2022).
3. *Encoding Hidden Information onto Surfaces Using Polymerized Cholesteric Spherical Reflectors* (open access, 30 citations)
   Yong Geng, Rijeesh Kizhakidathazhath, and Jan P. F. Lagerwall
   Adv. Funct. Mater., **31**, 21, 2100399 (2021)
4. *Interrogating helical nanorod self-assembly with fractionated cellulose nanocrystal suspensions* (open access, 53 citations)
   Camila Honorato–Rios and Jan P.F. Lagerwall
   Commun. Mater., **1**, artno. 69 (2020)
5. *Unclonable human-invisible machine vision markers leveraging the omnidirectional chiral Bragg diffraction of cholesteric spherical reflectors.* (open access, 29 citations) Hakam Agha, Yong Geng, Xu Ma, Deniz Isinsu Avsar, Rijeesh Kizhakidathazhath, Yan-Song Zhang, Ali Tourani, Hriday Bavle, Jose-Luis Sanchez-Lopez, Holger Voos, Mathew Schwartz, and Jan P.F. Lagerwall,
   Light, Science and Applications, **11**, 1 (2022)
6. *Facile anisotropic deswelling method for realizing large-area cholesteric liquid crystal elastomers with uniform structural color and broad-range mechanochromic response* (open access, 150 citations)
   R. Kizhakidathazhath, Y. Geng, V.S.R. Jampani, C. Charni, A. Sharma, **J. L.**,
   Adv. Funct. Mater., **30**, 7, 1909537 (2020)
7. *Liquid crystal elastomer shell actuators with negative order parameter* (open access, 64 citations)
   V.S.R. Jampani, R..H. Volpe, K. Regungo de Sousa, J. Ferreira Machado, C. M. Yakacki, **J. L.**
   Sci. Advances, **5**, *4*, eaaw2476 (2019)
8. *Cholesteric liquid crystal shells as enabling material for information-rich design and architecture* (open access, 109 citations)
   Mathew Schwartz, Gabriele Lenzini, Yong Geng, Peter Rønne, Peter Ryan, **J. L.**
   Adv. Mater., **30**, *30*, p. 1707382 (2018). *Progress Report, featured with frontispiece*
9. *Through the spherical looking-glass: asymmetry enables multicolored internal reflection in cholesteric liquid crystal shells*
   (open access, 53 citations), Yong Geng , J.-H. Jang, K.-G, Noh , JungHyun Noh, **J. L.** and S.-Y. Park
   Adv. Opt. Mater., **6**, 1700923 (2018). *Featured on inside journal cover.*
10. High-fidelity spherical cholesteric liquid crystal Bragg reflectors generating unclonable patterns for secure authentication
    (Open access, 148 citations) Yong Geng, JungHyun Noh, Irena Drevensek-Olenik, Romano Rupp, Gabriele Lenzini and **J. L.**
    Sci. Rep., **6**, Art.nr:: 26840, DOI: 10.1038/srep26840 (2016)

Conference contributions (summary)

- 68 plenary, keynote and invited oral conference/symposium presentations,
- 49 additional oral conference presentations (presenting author on 25),
- Ten invited tutorial lectures, one public lecture

Academic teaching and advising experience (summary)

- Developed and taught 16 full graduate courses (lectures and exams) in Germany, Korea and Luxembourg, 2 Ph.D./post-doc courses (lectures with student participation), and 1 undergraduate course (lectures and exam) in Luxembourg.
- Invited lecturer at multiple summer schools and conference tutorials
- Hosted 11 post-docs, brought 13 doctoral students to their Ph.D. title and 15 M.Sc./diploma and 9 B.Sc. students to their titles.

Entrepreneurship

- Co-founder and active team member of Trace Crystal SARL (tracecrystal.com), with two more company foundations underway.

Commissions of trust (selection)

First Luxembourg Ambassador for the ERC, 2025

Elected member of the steering committee for the ADVANCE mentoring program, University of Luxembourg.

Panel member for the evaluation of research grants from the Wallenberg Initiative Materials Science for Sustainability, Sweden, May 2024

Elected member of the scientific council of the Institute of Advanced Studies of the University of Luxembourg, 2022–2024.

Associate Editor for *Frontiers in Soft Matter*, since November 2021

Panel member for the final evaluation of the Junior Leader postdoctoral grants of La Caixa Foundation, Barcelona, Spain, February 2020.

Chair for the 2023 Gordon Conference on Liquid Crystals (shared with Prof. Cecilia Leal, University of Illinois, Urbana - Champaign) and co-chair for the 2019 conference in the same series.

Member of the external evaluation committee for the Research, Art and Impact assessment of Aalto University, Espoo, Finland (panel for chemical engineering and applied physics)

External expert reviewer of applications for professorship promotion (USA), of Ph.D. theses (Germany, South Korea, Netherlands, Luxembourg, Sweden, Finland, Italy, …) and of grant applications (ERC, Ireland, Germany, USA, Netherlands, Slovenia, Czech Republic, …)

Regularly consulted as manuscript referee (occasionally also book reviewer) by top international physics, chemistry and materials science journals, including *Nature*, *Science* and their daughter journals.

Public outreach and related activities (summary)

- Participated in the "Science is wonderful" science festival, Brussels, Belgium, 12–14th of March 2025.
- Participated in the "Researchers at school" initiative, Luxembourg, 11–12th of March 2024.
- Organizer of multiple workshops and meetings for audiences ranging from the general public (e.g. TEDxUniversityofLuxembourg 26.10.2018 and 25.19.2019, and TEDxSNUSuwon in 2013), via university students to professors (e.g. a European Research Foundation-funded Exploratory Workshop in 2009)
- Organizer of /contributor to science festivals for the general public and school children, in Sweden, Germany and Luxembourg.