

Web of Science Researcher Identifier: J-8233-2015

<https://orcid.org/0000-0002-9156-1895>

PERSONAL DATA

Name: Nerea
Surname: Sebastián Ugarteche
Nationality: Spanish
Date of Birth: 27 October 1985

Employment

- 2018 - Now Researcher, Department of Complex Matter, Jožef Stefan Institute, Ljubljana, Slovenia
- (2016 - 2018) Marie Skłodowska Curie Postdoctoral Research Fellow Department of Complex Matter, Jožef Stefan Institute, Ljubljana, Slovenia
- (2014 - 2016) Postdoctoral Position - Humboldt Postdoctoral Researcher Department of Nonlinear Phenomena, Otto von Guericke University, Magdeburg, Germany
- (2013- 2014) Postdoctoral Position Liquid Crystal group, University of the Basque Country UPV-EHU, Spain
- (2009- 2012) FPI PhD Student, University of the Basque Country, UPV-EHU

Education

- 2012 - Ph.D. in Physics
Advisor: Prof. María Rosario de la Fuente
“Physical properties of liquid crystal dimers: calamitics and bent-shaped”
Qualification: Cum Laude
Department of Applied Physics II, Faculty of Science and Technology, University of the Basque Country UPV-EHU, Bilbao, Spain
- 2003-2008 Licenciado en Física (Spanish Bch+Mstr)
Faculty of Science and Technology, University of the Basque Country UPV-EHU, Bilbao, Spain

Academic and scientific titles

- “Senior Research Associate”, Jožef Stefan Institute (March 2024)
- Spanish National Agency for Quality Evaluation and Accreditation (Agencia Nacional de la Evaluación de la calidad y acreditación-ANECA): "Profesor Contratado Doctor" (Associate Professor- Tenured).

Management functions

Oct 2022 – Sept 2026: Elected member of the “Council of Early Career Researchers” of the Jožef Stefan Institute (SZK – Sveta raziskovalka in raziskovalcev na Začetku Kariere). During the period Oct 2024-Oct 2025 in the role of vicepresident. The role of SZK members is to represent younger IJS researchers within the IJS’s working bodies and to support the younger community in their career development.

Mentorship and teaching

- Currently PhD co-advisor of 1 student (Liting Zhou -2nd year)
- Co-advisor of 1 PhD student (Matija Lovšin)
- Co-advisor of 2 finished master's students.
- Teaching Assistant During the academic periods 2010-2011 and 2011-2012 of the subject “Experimental Techniques I” of the Degree of Physics (B.Sc.) in the University of the Basque Country UPV-EHU (Spain).

Awards & Recognitions

- **2026** – Samsung Mid-Career Award by the International Liquid Crystal Society
- **2025** – Slovenian Research and Innovation Agency (ARIS) recognition “Excellence in Science” (Odlični v Znanosti) in the field of Physics, for the publication: Tunable entangled photons from liquid crystals, *Nature*, 2024, 631, 294-299.
- **2024** – Award for most excellent research achievements of the University of Ljubljana in 2024 for the publication: Tunable entangled photons from liquid crystals, *Nature*, 2024, 631, 294-299.
- **2024** – Slovenian Research and Innovation Agency (ARIS) recognition “Excellence in Science” (Odlični v Znanosti) in the field of Physics, for the publication: Polarization patterning in ferroelectric nematic liquids via flexoelectric coupling, *Nature Communications*, 2023, 14, 3029.
- **2024** Blinc Award for outstanding, one-time achievement for the paper N. Sebastian, L. Cmok, R.J. Mandle, M.R. de la Fuente, I. Drevenšek-Olenik, M. Čopič and A. Mertelj, “Ferroelectric-ferroelastic phase transition in a nematic liquid crystal”. *Phys. Rev. Lett.*, 2020, 124, 037801-1-037801-6.
- **2023** Daniel Vorländer Lecture Awarded by the German Liquid Crystal Society to young scientists with exceptional achievements in the field of liquid crystals.
- PhD Extraordinary Award Granted by the University of the Basque Country to the best PhDs defended during the academic year 2012/2013.

Summary of publications

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69 Scientific papers, of which 17 as first author, 4 as leading author.

2017 without self-citations “Web of Science citation report” and h-index : 24.

5 papers highlighted with the Essential Science Indicator in WoS “Highly Cited Publication” that places selected papers among top 1% cited papers for the field of Physics and publication year. Among them, the selected publications: 4, 9, and 10.

Recent selected publications

1. A. Sterle, P. Medle-Rupnik, L. Cmok, A. Erkoreka, M. Lavrič, N. Osterman, C. J. Gibb, J. Hobbs, J. Martinez-Perdiguero, R. J. Mandle, A. Mertelj, N. Sebastián, “Elasticity-Driven Periodic Polarization Patterns in a Chiral Ferroelectric Nematic Fluid”, *Advanced Materials*, 2026, e75002
2. M. Lovšin, L. Cmok, C. J. Gibb, J. Hobbs, R. J. Mandle, A. Mertelj, I. Drevenšek-Olenik and **N. Sebastián**, *Advanced Optical Materials*, 2026, 14, 5, e03018.
3. S. Klopčič, A. Kavčič, **N. Sebastián** and M. Humar, “Electrically and Geometrically Tunable Photon Pair Entanglement from Ferroelectric Nematic Liquid Crystal”, *Advanced Science*, 2025, 13, 3, e15206.
4. V. Sultanov, A. Kavčič, M. Kokkinakis, **N. Sebastián**, M. V. Chekhova and M. Humar, “Tunable entangled photons from liquid crystals”, *Nature*, 2024, 631, 294-299.
5. M. Lovšin, A. Petelin, B. Berteloot, N. Osterman, S. Aya, M. Huang, I. Drevenšek-Olenik, R. J. Mandle, K. Neyts, A. Mertelj and **N. Sebastian**, *Giant*, 2024, 19, 100315.
6. P. Medle Rupnik, L. Cmok, **N. Sebastián** and A. Mertelj, “Viscous Mechano-Electric Response of Ferroelectric Nematic Liquids” *Advanced Functional Materials*, 2024, 34, 2402554.
7. A. Erkoreka, J. Martinez-Perdiguero, R. J. Mandle, A. Mertelj and **N. Sebastián**, “Dielectric spectroscopy of a ferroelectric nematic liquid crystal and the effect of the sample thickness” *Journal of Molecular Liquids*, 2023, 387, 122566.

8. N. Sebastián, M. Lovšin, B. Berteloot, N. Osterman, A. Petelin, R. J. Mandle, S. Aya, M. Huang, I. Drevenšek-Olenik, K. Neyts and A. Mertelj, "Polarization patterning in ferroelectric nematic liquids via flexoelectric coupling", [*Nature Communications*](#), **2023**, 14, 3029. **Selected as Editor's Highlight.**

9. N. Sebastian, M. Čopič and A. Mertelj, "Ferroelectric nematic liquid-crystalline phases", (*Perspectives series*), [*Phys. Rev. E.*](#), 2022, 106, 021001-1-021001-27.

10. N. Sebastian, L. Cmok, R.J. Mandle, M.R. de la Fuente, I. Drevenšek-Olenik, M. Čopič and A. Mertelj, "Ferroelectric-ferroelastic phase transition in a nematic liquid crystal". [*Phys. Rev. Lett.*](#), 2020, 124, 037801-1-037801-6. **Featured as Editor's suggestion and in [Physics Today](#).**

Research projects as a project recipient

- [ARRS J1-2459](#): "Lima: Fundamental studies of ferromagnetic order in liquids" (2020-now).
- "[MagNem: Hydrodynamics of Ferromagnetic Nematic Liquid Crystals](#)" - Marie Curie Individual Fellowship (Project No. 701558) (2016-2018)
- "[Twend: Spontaneous Twist and Bend Deformation on Nematic Phases with Non-uniform Ground State](#)" Postdoctoral Research Project - Alexander von Humboldt Foundation, Germany (2014-2016)

Peer recognition

Keynote/Plenary talks at conferences:

- "Splaying and bending in ferroelectric nematic phases" *16th Int. Conf. on Ferroelectric Liq. Cryst., Leeds (UK)*. 2025

Invited talks at conferences as presenting author:

- "Patterned structures in ferroelectric nematic liquid crystals", Liquid Crystals Gordon Research Conference, Southern New Hampshire University, July 2025
- Ferroelectric nematics for complex non-linear optical structures, 17th European Conference on Liquid Crystals, Prague (Czech Republic), June 2025
- Polarization structuring in ferroelectric nematic phases. Rank Prize Symposium "New switching modes in liquid crystals- potential of the ferroelectric nematic phase", Ullswater (UK), June 2025
- Ferromagnetic liquid crystals: static and dynamic properties. V: *16th Int. Conf. on Ferroelectric Liq. Cryst., Hong Kong*. 2017.
- "Ferroelectric nematic phase: from the discovery to the shaping of polarization." 12. konferenca fizikov v osnovnih raziskavah: zbornik povzetkov: Terme Čatež, 2022.

Invited lectures at foreign institutions:

- "Ferroelectric nematic liquid crystalline phase", Faculty of Physics, University of Vienna, 2022.
- "Ferroelectric nematic phase: from the discovery to shaping polarization", Invited lecture at the Soft Matter Seminar Series, Department of Physics, University of Leeds, 2022.
- "Polar nematic phases", Department of Soft Matter, Institut für Physik, Otto-von-Guericke Universität, Magdeburg, Germany. 2019

Other contributions to the research community

- July 2026- Present – Secretary of the International Liquid Crystal Society
- 2024 – Jury of the International Liquid Crystal Society "Picture of the Month" scientific art contest.
- May 2024 – Organization (Chair) of the international "Workshop on Ferroelectric Nematic Liquid Crystals", Ljubljana, Slovenia, 29-31 May 2024.
- 2021- Conference Vice-Chair of the 18th International Conference on Ferroelectric Liquid Crystals (FLC2021), Ljubljana, Slovenia.
- 2019 – 2025, Coordinator of the Complex Matter department (IJS) seminars.