

Sabina Hillebrandt

Personal Data

Title	Dr. rer. nat.
First name	Sabina
Name	Hillebrandt
Current position	Junior Research Group Leader
Current institution(s)/site(s), country	Humboldt Centre for Nano- and Biophotonics, Institute for Light and Matter, Department of Chemistry and Biochemistry, University of Cologne, Germany
ORCID	0000-0002-2628-385X

Qualifications and Career

Stages	Periods and Details
Studies	2008 – 2011 Bachelor of Science, Physics, Heidelberg University, Germany, orientation Biophysics 2011 – 2014 Master of Science, Physics, Heidelberg University, Germany, orientation organic electronics and surface chemistry
PhD	2014 – 2017 Kirchhoff Institute for Physics, Heidelberg University, Germany (Infrared spectroscopic investigation of electrode modifications and their impact on the adjacent organic semiconductors, summa cum laude, PhD advisor Annemarie Pucci)
Postdoc	Jan. 2018 – Sept. 2018: Research Fellow, Kirchhoff Institute for Physics, Heidelberg University, Germany, working with A. Pucci.
Postdoc	2018 – 2021: Postdoctoral Research Associate, School of Physics and Astronomy, University of St Andrews, UK, working with Malte Gather
Postdoc	2021 – present: Senior Research Associate, HCNB, Department of Chemistry and Biochemistry, University of Cologne, Germany, working with Malte Gather
Juniorprofessor	April 2026 – : W1 tenure track W2, Bioelectronics and Functional Materials, University of Cologne, Germany (appointment accepted; start date: April 1, 2026)

Activities in the Research System

Institutional Responsibilities (selected)

Since 2025	Member of the Cologne Cluster of Excellence Cluster on Aging and Aging-Associated Diseases (CECAD)
Since 2023	Committee member OPTICA Advanced Photonics Congress Solar Energy and Light Emitting Devices (SOLED) Since 2020 Referee and independent expert for Nature Communications, Scientific Reports, Advanced Optical Materials, npj Flexible Electronics

Awards and Recognitions

2025	European Research Council (ERC) Starting Grant — Principal Investigator, k€ 1,500
2025	DFG Research Grant — Principal Investigator, k€ 655
2025	Christiane Nüsslein-Volhard Foundation Fellowship — Individual fellowship supporting mothers in research, k€ 6
2015	Landesgraduiertenakademie Baden-Württemberg Fellowship — Individual doctoral fellowship (sole applicant), k€ 40
2012	Erasmus Scholarship — Individual mobility grant, University of York (UK), k€ 6

Supervision of Researchers in Early Career Phases

Since 2014, I have been involved in the supervision of early career researchers as co-supervisor and acting supervisor, contributing to the supervision of four PhD candidates across three institutions. This includes one PhD at the Kirchhoff Institute for Physics, Heidelberg University (Valentina Rohnacher, 2016–2018), one PhD at the School of Physics and Astronomy, University of St Andrews (Yali Deng, 2016–2020), and two PhDs at the Department of Chemistry, University of Cologne (Julian Butscher, 2020–2024; Sumit Mohapatra, since 2024).

In addition, I am an associated principal investigator in the graduate research training program TIDE (Template-Designed Organic Electronics) RTG 2591, where I contribute to doctoral training through mentoring and participation in workshops, retreats, and conferences.

Scientific results

Selected publications in peer-reviewed journals within the last 4 years:

(* = joint first authorship)

Mischok, A.; Siegmund, B.; Le Roux, F.; Hillebrandt, S.; Vandewal, K.; Gather, M. C. Breaking the angular dispersion limit in thin film optics by ultra-strong light-matter coupling. *Nat Comm* 2024, 15, (1), 10529.

<https://doi.org/10.1038/s41467-024-54623-1>.

Butscher, J. F.; Hillebrandt, S.; Mischok, A.; Popczyk, A.; Booth, J. H. H.; Gather, M. C. Wireless Magnetoelectrically Powered Organic Light-Emitting Diodes. *Sci Adv* 2024, 10 (10), eadm7613. <https://doi.org/10.1126/sciadv.adm7613>.

Hillebrandt, S.; Moon, C.; Taal, A. J.; Overhauser, H.; Shepard, K. L.; Gather, M. C. High-Density Integration of Ultrabright OLEDs on a Miniaturized Needle-Shaped CMOS Backplane. *Adv Mater* 2023, 2300578.

<https://doi.org/10.1002/adma.202300578>.

Taal, A. J.*; Uguz, I.*; Hillebrandt, S.*; Moon, C.-K.*; Andino-Pavlovsky, V.; Choi, J.; Keum, C.; Deisseroth, K.; Gather, M. C.; Shepard, K. L. Optogenetic Stimulation Probes with Single-Neuron Resolution Based on Organic LEDs Monolithically Integrated on CMOS. *Nat Electron* 2023, 6 (9), 669–679.

<https://doi.org/10.1038/s41928-023-01013-y>.

Mischok, A.; Hillebrandt, S.; Kwon, S.; Gather, M. C. Highly Efficient Polaritonic Light-Emitting Diodes with Angle-Independent Narrowband Emission. *Nat Photon* 2023, 17 (5), 393–400. <https://doi.org/10.1038/s41566-023-01164-6>.

Tenopala-Carmona, F.; Hertel, D.; Hillebrandt, S.; Mischok, A.; Graf, A.; Weitkamp, P.; Meerholz, K.; Gather, M. C. Orientation distributions of vacuum-deposited organic 1. 2. 3. 4. 5. 6. 7. emitters revealed by single-molecule microscopy. *Nat Comm* 2023, 14, 6126.

<https://doi.org/10.1038/s41467-023-41841-2>.

Hillebrandt, S.; Keum, C.; Deng, Y.; Chavas, J.; Galle, C.; Hardin, T.; Galluppi, F.; Gather, M. C. High Brightness, Highly Directional Organic Light-Emitting Diodes as Light Sources for Future Light-Amplifying Prosthetics in the Optogenetic Management of Vision Loss. *Adv Opt Mater* 2022, 2200877. <https://doi.org/10.1002/adom.202200877>.

Selected invited / contributed talks

- 2026 SPIE Photonics West San Francisco – invited talk
- 2025 Optical Probes, Fukuoka – contributed talk
- ICOE (International Conference on Organic Electronics) Coimbra – contributed talk
- Optogen Copenhagen – poster and contributed talk
- 2024 ICSM (Synthetic Electronic Materials) Dresden – contributed talk
- 2023 SPIE Photonics West San Francisco – contributed talk
- 2022 Optica Advanced Photonics Congress (SOLED) Maastricht – invited talk
- ICEL (Intern. Conference on Electroluminescence and Optoelectronic Devices) London – contributed talk

Other contributions and outreach

As part of my research activities, I co-developed and maintained open-source software for reproducible optoelectronic measurements (J. Butscher, S. Hillebrandt, F. Tenopala-Carmona, E. Archer, M. C. Gather, 2020–2024; <https://github.com/GatherLab>). In parallel, I contributed detailed experimental protocols and setup instructions for the angle-resolved characterization of organic light-emitting diodes (OLEDs). These openly accessible resources enable reproducible, high-precision optoelectronic measurements and contribute to the standardization and comparability of OLED efficiency characterization across laboratories. This work is documented in: Archer, E.*; Hillebrandt, S.*; Keum, C.*; Murawski, C.; Murawski, J.; Tenopala-Carmona, F.; Gather, M. C. Accurate Efficiency Measurements of Organic Light-Emitting Diodes via Angle-Resolved Spectroscopy. *Adv Opt Mater* 2020, 2000838. (*joint first authorship) <https://doi.org/10.1002/adom.202000838>. In addition, I collaborated with GenSight Biologics, a biotechnology company specializing in optogenetic approaches to vision restoration, contributing to applied research and translational development projects at the interface of fundamental photonics and clinical application.