



UNIVERSITY
OF COLOGNE

Faculty of Mathematics and Natural Sciences

Research and Development Scientist (f/m/x)

Humboldt-Centre for Nano- and Biophotonics



Foto: Thomas Jösel

We are one of the largest and oldest universities in Europe and one of the most important employers in our region. Our broad range of subjects, the dynamic development of our main research areas and our central location in Cologne make us attractive for students and researchers from around the world. We offer a wide range of career opportunities in science, technology, and administration.

The HCNB is developing a groundbreaking and fundamentally new technology for optical filters that aim to significantly reduce noise in a wide range of applications. This novel "polariton filter" technology overcomes the problem of angle-dependence in thin film optical coatings by exploiting the quantum mechanical interaction of light with electronically excited states in thin layers of organic materials, significantly enhancing the performance of a variety of optical systems. The exceptional angular stability of our filter technology offers decisive advantages, especially when measuring a wide field of view, in key applications such as light detection and ranging, computer vision and microscopy. In comparison to competing filter technologies, the use of organic materials in our filter technology enables flexible adaptation to specific applications (e.g. in the desired spectral range), reduces production costs and energy consumption in the medium term and enables the production of large-area filters that can be adapted to components with a range of geometries. We are aiming at creating a spin-off company for the design and production of polariton filters and are looking to complement our team on this exciting journey from university research to commercialization. Our activity is currently funded by the BMWK EXIST scheme.

YOUR TASKS

In this role, you will be tasked with:

- » Identifying and characterizing new organic materials with tailored absorption properties
- » Designing multi-layer filter stacks with our in-house software
- » Optimizing thin film deposition techniques to achieve controlled film thickness and spectral selectivity
- » Integrating materials into prototype spectral filters for high-performance applications in LiDAR, microscopy, health care diagnostics and many more

YOUR PROFILE

- » We are seeking a highly skilled scientist with a strong technical background in organic semiconductors to advance our research and entrepreneurial activities into thin film spectral filters. Ideal candidates will hold an advanced degree (at least MSc., preferably PhD or equivalent) in chemistry, materials science, or physics, with demonstrable expertise in material development, characterization, processing, and/or device integration of light-absorbing organic semiconductors. Knowledge of thin film optical coatings and their fabrication is advantageous but not crucial.

WE OFFER

- » A fully equipped working space and access to the HCNB infrastructure
- » A diverse working environment with equal opportunities
- » Support in balancing work and family life
- » Flexible working time models
- » Extensive advanced training opportunities
- » Occupational health management offers

The University of Cologne promotes equal opportunities and diversity. Women will be considered preferentially in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz – LGG NRW). We also expressly welcome applications from all suitable candidates regardless of their gender, nationality, ethnic and social origin, religion, disability, age, sexual orientation and identity.

The position is available immediately on a full-time basis (39,83 hours per week). The position is to be filled for a fixed term until 31 March 2027. If the applicant meets the relevant wage requirements and personal qualifications, the salary will be based on remuneration group 13 TV-L of the pay scale for the German public sector.

Please apply online with proof of the required qualifications without a photo under: <https://jobportal.uni-koeln.de>. The reference number is Wiss2506-08. Deadline is 30 June 2025.

Please include in your application a letter of motivation, a CV, a list of your publications and copies of your certificates.

For further inquiries, please contact Dr Andreas Mischok (andreas.mischok@uni-koeln.de) and Professor Malte Gather (malte.gather@uni-koeln.de) and take a look at our [FAQs](#).