

# Job Advertisement

The Leibniz Institute of Photonic Technology ([Leibniz-IPHT](http://www.leibniz-ipht.de)) offers the following **position** in the **Department [Spectroscopy and Imaging](#)**, **Work Group [Field-Resolved Optical Precision Metrology](#)**, starting at the next possible time:

## PhD candidate or Postdoc

The **part-time PhD position (65 %)** is limited to **3 years**, a **Postdoc position would be full-time (100 %)** and is limited to **2 years**. An extension will be sought if suitable.

The Leibniz-IPHT is a university independent research institute with close connection to the [Friedrich-Schiller-University Jena](#) and member of the [Leibniz association](#).

### Job description

Using numerical models, the candidate will quantitatively investigate the potential of optical spectroscopy or biomedical applications, considering the limitations set by current spectroscopic techniques as well as fundamentally by the nature of light. This sensitivity and specificity analysis for complex biological samples will contribute to the development of novel infrared spectroscopic techniques<sup>1,2</sup> toward addressing unmet medical diagnostic needs, in particular in severe infections and sepsis<sup>3</sup>. The candidate will be affiliated with the Field-Resolved Optical Precision Metrology Group as well as with the Chair of Optical Quantum Metrology at the [Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau \(RPTU\)](#), closely accompanying complementary experimental work at the two institutions. The close collaboration with the Department of Anesthesiology and Intensive Care Medicine as well as the Institute for Clinical Chemistry and Laboratory Diagnostics, both at the [Jena University Hospital](#), provide an excellent clinical-scientific environment, guaranteeing the immediate application of new findings of the candidate's work to urgent biomedical questions.

### Your field of activity includes:

- Develop numerical models for assessing the fundamental as well as technical limitations of vibrational spectroscopy with respect to sensitivity and specificity in the multivariate analysis of biological gases as well as cells.
- Collaborate with partners within the DFG-funded Cluster of Excellence Balance of the Microverse in translating these findings to real-world biomedical settings, such as headspace analysis of in-vitro bacterial and cell cultures, to study their response to pathogen and drug simulation, the spectroscopic analysis of the exhalome of intensive-care patients, as well as high-throughput, label-free phenotyping of large numbers of cells according to their infrared fingerprints.
- Help guiding the development of novel molecular-spectroscopic methods for biological gases and cells.

### Your qualification:

- Completed Master's degree (or equivalent) in the natural or computer sciences for PhD candidates or completed doctorate in natural or computer sciences for postdoc candidates.

### Desired knowledge and skills:

- Very good programming skills, ideally an understanding of molecular spectroscopy
- Experience in numerical modelling of molecules is advantageous
- Enjoy interdisciplinary work with a focus on applications in the biomedical field
- Strong motivation, commitment and independence
- Very good written and spoken English

## **We offer:**

- **An open welcoming culture** and an inclusive and interdisciplinary working environment: Located on the Beutenberg campus in Jena, Leibniz-IPHT is home to more than 400 employees from around the world working at the interface of physics, biochemistry, technology, data science and medicine to develop the photonic technologies of tomorrow.
- **World-class equipment and facilities:** Leibniz-IPHT has a large number of physics, chemistry and biology laboratories at the highest level. It also has state-of-the-art fiber drawing and clean room facilities (including lithography facilities) as well as microfluidics fabrication and big data computing facilities.
- **Thorough and comprehensive personal training:** Transferring good practices in scientific working and outreach is one of our main focus points. We'll teach everything that is needed for a career inside and outside of academia in a respectful and enjoyable way. Moreover, plenty of workshops and opportunities for scientific exchange are offered by the Leibniz IPHT, as well as the Abbe School of Photonics and the Graduate Academy of the Friedrich-Schiller University Jena.
- **A family-friendly working environment** with support offers for the compatibility of family and work (e.g. parent-child rooms, campus kindergarten places, advice on family care situations from trained care guides and much more).
- **Flexible working time models** as well as 30 days vacation/year, special annual payment and bridge days.
- **Jena - City of Science:** A young city with a vibrant local cultural agenda!

## **Salary:**

Salary is in accordance with the regulations of the TV-L and your qualifications and experience.

## **About us:**

We are a modern, internationally focused research institute. Work-life balance is one of our central concerns. We value diversity and therefore welcome all applications - regardless of gender, disability, nationality or ethnic and social origin. If women are underrepresented in the area of the advertised position, they will be given preferential consideration in the hiring process if they are equally qualified.

## **Further information:**

The successful candidate will work within the ERC project "LIVE" at the project's two locations, Jena and Kaiserslautern. If you have any questions, please contact [Prof. Dr. Joachim Pupeza](mailto:ioachim.pupeza@rptu.de), mail: [ioachim.pupeza@rptu.de](mailto:ioachim.pupeza@rptu.de).  
See also: [lightwavelab.de](http://lightwavelab.de)

## **Application:**

Please apply **by April 30, 2024** via our job portal (<https://www.leibniz-ipht.de/en/institute/career/job-portal/>) by clicking on the "apply" button.

***Leibniz-Institute of Photonic Technology Jena e. V.***  
***Human Resources***  
***Albert-Einstein-Straße 9, 07745 Jena***

**Code: 1245**

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<sup>1</sup> I. Pupeza et. al., "Field-resolved infrared spectroscopy of biological systems", Nature 577, 52 (2020).

<sup>2</sup> P. Sulzer et. al., "Cavity-enhanced field-resolved spectroscopy", Nature Photonics 16, 692 (2022).

<sup>3</sup> M. F. Osuchowski et. al., "The COVID-19 puzzle: deciphering pathophysiology and phenotypes of a new disease entity", Lancet Respiratory Medicine 9, 622 (2021).