



MEDICAL
UNIVERSITY
INNSBRUCK



ERC Advanced Grant – PhD & Postdoctoral Positions in Biomedical Optics

We invite applications for **PhD and postdoctoral positions** within the newly funded **ERC Advanced Grant "DeepVibes"**.

DeepVibes aims to overcome one of the fundamental limitations of optical microscopy: imaging deep inside living tissue while maintaining molecular specificity and diffraction-limited resolution. To achieve this, the project combines **label-free, chemically specific Stimulated Raman Scattering (SRS) microscopy** with next-generation **adaptive optics**, dynamic **wavefront shaping**, and **computational imaging**.

The technologies developed within DeepVibes will enable non-invasive visualization of biological structures and chemical composition deep inside intact tissue, with applications ranging from **histopathological diagnosis** to **fundamental biological research**.

The project combines cutting-edge developments in:

- Stimulated Raman Scattering (SRS) microscopy
- Adaptive optics and wavefront shaping
- Optical diffraction tomography and wavefront sensing
- Computational imaging, inverse problems and scientific computing

Available Research Topics

Depending on background and interests, successful candidates may contribute to one or more of the following areas:

- Development of laser scanning microscopes with active wavefront control
- Computational imaging and inverse reconstruction
- Optical tomography
- Coherent Raman microscopy
- AI-assisted image reconstruction and analysis

Candidate Profile

We are looking for highly motivated applicants with a background in:

- Physics
- Photonics
- Computational Microscopy

- Optical Engineering

or closely related disciplines.

Experience in one or more of the following is advantageous:

- Experimental lab work in planning, constructing and controlling optical setups
- Scientific programming (Python)
- Optical Microscopy
- Machine learning

We Offer

- Participation in an ERC Advanced Grant project
- State-of-the-art laser laboratories and instrumentation
- Working in interdisciplinary collaborations in biology and medicine
- A supportive research environment
- Excellent opportunities for scientific development and conference participation



About Innsbruck

Located in the heart of the Alps, Innsbruck offers an exceptional quality of life and is internationally renowned for outdoor sports including climbing, skiing, hiking and mountain biking, while providing a vibrant scientific environment.

How to Apply

Applicants should submit:

- CV
- Motivation letter
- Academic transcripts (PhD applicants)
- Publication list (postdoctoral applicants)
- Contact details of at least two referees

Applications will be reviewed on a rolling basis until the positions are filled.

The earliest starting date is 1st Jan. 2027

For informal enquiries, please contact:

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