Regional Centre for Special Optics and Optoelectronic Systems
Institute of Plasma Physics of the Czech Academy of Sciences

The TOPTEC research center, a part of IPP CAS, is one of the application centers of the Czech Academy of Sciences. The core of the center's work lies in the construction of special optical systems, including ESA space projects PROBA-3, METIS, and many others. Devoted to this goal, the center has built expertise in interferometric optical metrology, thin-film deposition, material processing, material research, and spectroscopy. The center is based in Turnov, a town with easy access to Prague (Czech Republic) and Dresden (Germany), located in the beautiful landscape of the Bohemian Paradise. Turnov was ranked in 2024 as "the best place to live" in the Czech Republic.

Ph.D. Position in Ultrafast Acoustics and Nonlinear Spectroscopy

Job profile:

The research group of Computational Spectroscopy at the TOPTEC Center, led by Karel Žídek, focuses on the implementation of novel methods, such as compressed sensing, to revisit standard techniques of laser spectroscopy. The activities include work in microscopy, pump-probe spectroscopy, and photoluminescence decay measurements. [Sci. Rep. 13 (2023) 8658; Opt. Express 32 (2024) 24756; Opt. Lett. 50 (2025) 1885]

Supported by an ERC-GOG grant COINED, we are currently building a unique experiment combining second-harmonic generation (SHG) spectroscopy with ultrafast acoustics. We envision this approach as an opportunity to trace properties of thin-film interfaces that are not accessible by any other method.

We are searching for a Ph.D. student to work in experimental SHG spectroscopy and ultrafast acoustics. The work will comprise building and optimizing new, exciting experimental setups and advanced data processing. Additionally, you can also learn thin-film characterization (including AFM and electron microscopy), software control of the experiment, and computational signal retrieval.

Requirements:

- MSc. (or equivalent, including technical university degrees) in optics or a related field
- Experience with optics (theoretical or experimental)
- Programming (or a positive attitude to learning it)
- Good English communication skills

Experience with thin films, ultrafast spectroscopy, nonlinear optics, or solid-state physics is an asset.

Offer:

We offer a contract at TOPTEC Research Center, providing guidance and supervision of Ph.D. studies at the Technical University in Liberec—in total, the equivalent of 1 FTE position. The position at TOPTEC Research Center is available to start on July 1st, 2025, and it will be arranged for the duration of the Ph.D. with the possibility of extension. We offer a salary based on the IPP public research scheme, which includes Czech health insurance coverage.

Contact person:

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Application guidelines:

If you are interested, please send your application, including your CV and motivation letter, to Karel Žídek. Review of applications will begin immediately and continue until the position is filled.

We value diversity and welcome applicants regardless of gender, disability, religion, or ethnic background.