

## PhD and Postdoc Position in the Christian Doppler Laboratory for Mid-IR and Semiconductor Optics

The Christian Doppler Laboratory for Mid-IR and Semiconductor Optics strives to extend frequency comb technology further into the mid-IR spectral region and will pursue applications with these frequency combs in the field of trace gas detection, precision spectroscopy and breath analysis.

Working at this Christian Doppler Laboratory provides the chance to gain high level expertise and practical experience in pushing the limits of Mid-IR spectroscopy and the unique opportunity to work with the most advanced optical components available today.

Mid-IR frequency combs enable detection of molecular species showing absorption in the important molecular fingerprint region between  $500\text{ cm}^{-1}$  and  $4000\text{ cm}^{-1}$  ( $2.5\text{--}20\text{ }\mu\text{m}$ ). Examples include the detection of pollutants such as ozone, methane, carbon monoxide, nitric oxide or biomarkers indicating malignoma or other severe diseases.

Progress in the mid-IR spectral region has been hindered in large part by the lack of high quality and low loss optics. Within the Christian Doppler laboratory, we will explore the advantages and possibilities of newly available high reflectivity and low loss optics in the mid IR. These revolutionary mirrors will be based on crystalline supermirror technology provided by our industrial partner CMS.

The Christian Doppler Laboratory, which is part of the University of Vienna and is supported by Crystalline Mirror Solutions GmbH (CMS), has two open positions, a PhD student and a Postdoc position.

**We seek** a highly motivated **PhD candidate** with a Master's degree in physics or a related area who is keen to develop novel experimental tools enabling cutting edge research in the mid-IR spectral region. Ideally, candidates already have some experience in (ultrafast) optics, spectroscopy or electronics. In addition, the successful **postdoctoral researcher** should have a strong background in either precision spectroscopy, nonlinear optics or ultrafast optics. Both positions are available in February 2017.

**For further information**, please contact Dr. Oliver Heckl (PI) by email ([Oliver.Heckl@jila.colorado.edu](mailto:Oliver.Heckl@jila.colorado.edu)). The group is located at Faculty of Physics, Universität Wien.

Recent work of the PI:

[Three-photon absorption in optical parametric oscillators based on OP-GaAs](#),

[Direct frequency comb measurement of OD + CO  \$\rightarrow\$  DOCO kinetics](#),

[Continuous probing of cold complex molecules with infrared frequency comb spectroscopy](#)

**We look forward** to receiving your application including a cover letter, CV and transcripts of academic degrees. Please provide names and contact information for at least two referees.

**Please submit** your application via email to Maria Raneburger (phone: +43 1 516333115, email: [maria.raneburger@univie.ac.at](mailto:maria.raneburger@univie.ac.at))