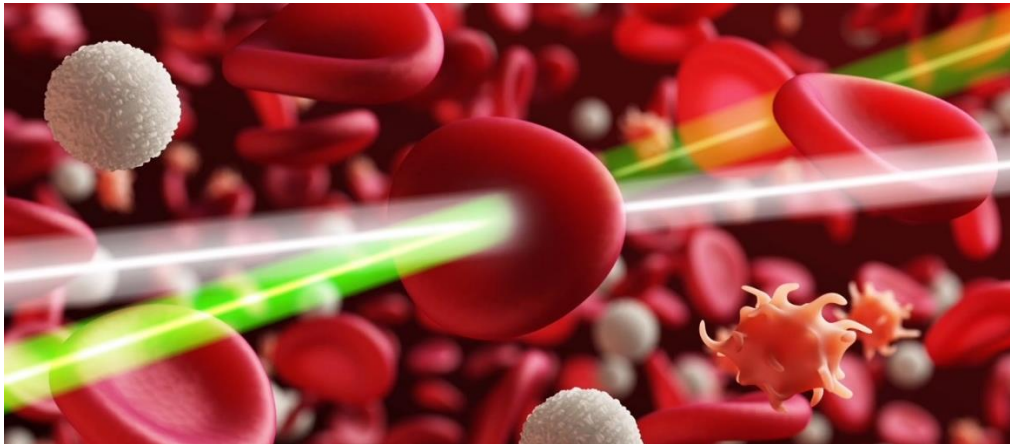


# Bachelor's project on a laser-based diagnostics of bacterial and viral pneumonia from human blood samples

(for bachelor students of Physics, Biology, Biomedicine or related subjects)



The group of **Broadband Infrared Diagnostics** (BIRD group), at the Chair of Experimental Physics at Ludwig-Maximilians-Universität München, is a unique collaborative venture involving laser specialists, molecular life scientists, mathematicians and clinicians, devoted to the use of state-of-the-art laser-based technologies for health monitoring and disease diagnostics<sup>1</sup>. The goal is to probe the feasibility and efficacy of newly developing infrared laser spectroscopy for the detection of cancer and other diseases ([www.attoworld.de/bird](http://www.attoworld.de/bird); [www.lasers4life.de](http://www.lasers4life.de)). Our group is based at the Research Center in Garching (Forschungszentrum Garching, Section Physics of LMU, Am Coulombwall 1, 85748 Garching), which is easily accessible by public transport.

For the proposed Bachelor's project, we aim to test the ability of our technique to diagnose pneumonia from blood samples for the very first time. In particular, we are interested to distinguish between pneumonia of viral and bacterial origin, respectively. The challenge in clinical practice is to differentiate between these two causes as early as possible so that the therapy can be tailored accordingly. For this end, we have a fully matched sample set consisting of human serum and plasma from pneumonia patients and healthy controls (all samples were taken before the occurrence of COVID-19).

Please address your interest to join our team to our group leader Dr. Mihaela Zigman ([mihaela.zigman@mpg.de](mailto:mihaela.zigman@mpg.de)), Dr. Frank Fleischmann ([frank.fleischmann@physik.uni-muenchen.de](mailto:frank.fleischmann@physik.uni-muenchen.de); phone: 089 289 54056) or Marinus Huber ([huber.marinus@physik.uni-muenchen.de](mailto:huber.marinus@physik.uni-muenchen.de)).

<sup>1</sup>Pupeza, I.; Huber, et al. Field-Resolved Infrared Spectroscopy of Biological Systems. Nature 2020, 577 (7788), 52–59. <https://doi.org/10.1038/s41586-019-1850-7>.