

## **Student Assistant / M.Sc. project**

# **Development of an on-plate screening system for photophysical characteristics of bacterial colonies.**

### **Description:**

At the Chair for Biological Imaging of TUM the research group for CellEngineering focuses on enabling genetically encoded labels for optoacoustic imaging (OA). OA is an emerging methodology bridging light excitation and ultrasound detection towards deep tissue imaging. The physical concept of this technique requires exclusively tailored labels aiming, contrary to their counterparts in fluorescence imaging, for a maximization of the non-radiative decay channel. Moreover, the deeper penetration depth of OA and the potential existence of strong absorbers (e.g. blood) call for an eye for infrared applicability.

In order to strengthen and extend our capabilities, we are recruiting for a Student Assistant or Master's Student to establish a setup to screen for novel labels based on the photophysical parameters determining the OA signal, i.e. absorptivity and quantum yield. This project aims at combining arc-lamp illumination of whole bacterial-growth plates combined with camera detection of fluorescence and absorbance. Towards this end we have to combine homogenous illumination as well as adequate detection, image processing and quantification (i.e. identification of bacterial colonies as well as quantification and comparison of detected signal of individual colonies).

### **Requirements:**

- Bachelor's degree in Physics, Mechatronic, Electrical Engineering, Electromechanical Engineering, or related discipline.
- Knowledge in setting up optical systems
- Programming experience with real-world instrumentation (hardware/software integration and control), using one or more of the major programming languages, such as LabVIEW, Matlab, C++/C#, and Python.

### **Additional qualifications**

- Highly motivated to work independently and in teams
- Eager to face intellectual challenges

### **Contact information:**

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