

– Research Internship –

# Test bench development for spectroscopic measurement of electrode sheets

## Motivation

Li-ion cells are complex systems that exhibit location-dependent phenomena due to their geometry. A spectroscopic test rig is currently being set up so that these geometrically dependent phenomena can be investigated post-mortem.

## Tasks

Various tasks must be completed in order to finalise the test bench. Individual tasks can be carried out as part of a research project. The technical platforms range from host systems (normal laptop/PC) and single-board computers (Raspberry Pi) to microcontrollers (STM32) and embedded systems. The following tasks are available:

- WP 1. Development of a control/operating logic
- WP 2. Implementation of data management in MySQL
- WP 3. Development of a lighting unit (HW/SW development)
- WP 4. Development of a graphical user interface (MATLAB/HTML)

All work packages include the recording of the respective requirements, presentation of the technical solution and its realisation and documentation. Requirements and technical solutions are coordinated in close cooperation with the supervisor.

## Prerequisite

The scope of knowledge depends on the work packages to be processed:

- Solid knowledge of C/C++ (or solid knowledge of Python)
- Alternatively, good knowledge of Node-Red (or other solution for controlling embedded systems)
- Basic knowledge of Linux/Raspbian
- MySQL database knowledge
- GUI design (MATLAB /HTML)
- Raspberry Pi knowledge is an advantage

## Emphasis

- Cell-characterisation
- Test-conduction
- Hardware-development
- Software-design
- Modeling
- Simulation
- Literatur-research

## Course of Studies

- Elektro-/Informationstechnik
- Informatik
- Maschinenbau
- Physik
- Mathematik
- Chemieingenieurwesen
- Wirtschaftsingenieurwesen

## Date of start

from 01.06.2024

## Person of Contact

Marcel Rogge

[Marcel.Rogge@tum.de](mailto:Marcel.Rogge@tum.de)

Telefon: +49 (0) 89 / 289 - 26979

Raum: 3006

<http://www.ees.ei.tum.de>