

Master's thesis project

Renewable active materials for organic redox flow batteries

The increasing share of renewable energy sources leads to fluctuations of the grid, consequently, there is a need for large-scale energy storage/buffering systems. Promising candidates to tackle this challenge are redox-flow batteries, where dissolved electrolytes are circulated through a battery cell. Unfortunately, most of the currently available active materials are based on heavy metals and/or halogens.

Recently, we developed vanillin based active materials for aqueous redox flow batteries. This is a promising approach to solve the dilemma of sustainable energy storage as vanillin is one of the few fine chemicals which can be produced from lignin on industrial scale.

The aim of the thesis is to investigate the up-scaling of the active material synthesis (batch and continuous) as well as the chemical stability of the products. It combines aspects of chemistry and chemical engineering.

Start date: As soon as possible

Place of work: TU Graz

Salary: Amount to be discussed

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