Master Theses in
High-Throughput Synthesis of Organic Small Molecules

The Helmholtz Institute Erlangen-Nuremberg for Renewable Energies (HI ERN), part of the Forschungszentrum Jülich, researches and develops material- and process-based solutions for climate-neutral, sustainable and cost-effective utilization of renewable energies.

The research group High Throughput Materials and Devices specializes in

- Combinatorial materials research
- High throughput synthesis, formulation, film deposition and characterization
- Characterization and Processing equipment development
- Big data methods and Machine Learning

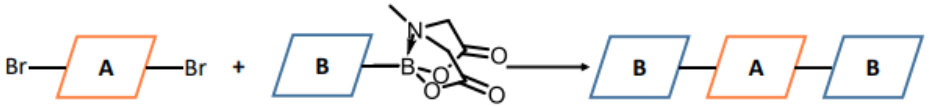
for the development of printed solar cells with improved efficiency and stability.

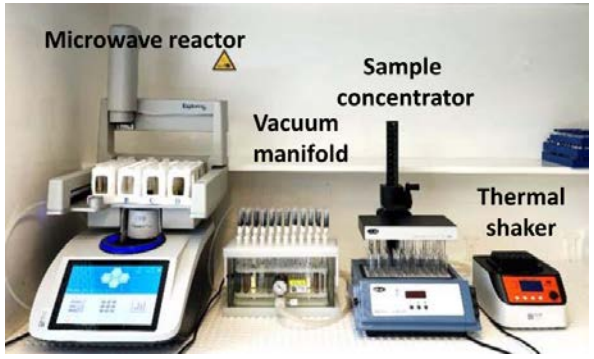
We offer the opportunity for **Masters and Bachelor theses** in **high-throughput synthesis and characterization of conjugated organic small molecules for photovoltaic applications**.

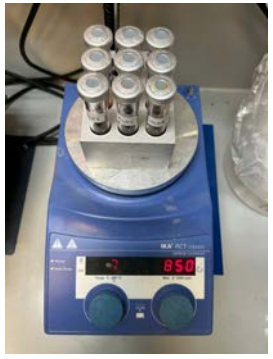
Qualification:

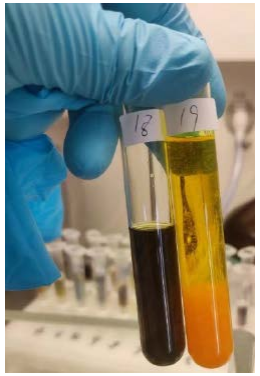
- Currently pursuing a degree in Chemistry or a related field
- Strong interest in organic synthesis and chromatography techniques
- Proficient in laboratory work with outstanding technical skills
- Self-motivated and ambitious

Note: Students of MWT, NT, Energy Technology, Advanced Materials & Processes (MAP) can be directly examined. Students from other disciplines require an examiner from their department.









Recent Publications:

Wu et al., Integrated System Built for Small-Molecule Semiconductors via High-Throughput Approaches, **Journal of the American Chemical Society** (2023) https://doi.org/10.1021/jacs.3c03271
Langner et al., Beyond Ternary OPV: High-Throughput Experimentation and Self-Driving Laboratories Optimize Multicomponent Systems, **Advanced Materials** (2020) https://doi.org/10.1002/adma.201907801
Gu et al., Robot-Based High-Throughput Screening of Antisolvents for Lead Halide Perovskites, **Joule** (2020), https://doi.org/10.1016/j.joule.2020.06.013
Du et al., Elucidating the Full Potential of OPV Materials Utilizing a High-Throughput Robot-Based Platform and Machine Learning, **Joule** (2020) https://doi.org/10.1016/j.joule.2020.12.013
Y. Zhao et al., Discovery of temperature-induced stability reversal in perovskites using high-throughput robotic learning**. Nature Communications** (2020) https://doi.org/10.1038/s41467-021-22472-x
Wagner, J. et al. The evolution of Materials Acceleration Platforms: toward the laboratory of the future with AMANDA **Journal of Material Science** (2021) https://doi.org/10.1007/s10853-021-06281-7

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