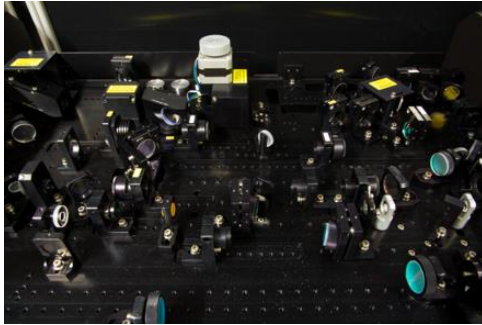
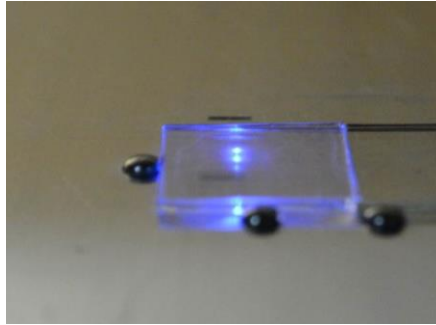


## Master thesis

### Laser processing of organic solar cells



fs-laser system



ns-laser annealing

#### Motivation

Lasers are powerful and versatile tools for the modification of organic solar cells. Organic solar cells utilize conductive, high-absorption polymers for printable, mechanically flexible and ultra-thin devices. For selective structuring of individual layers, precise femtosecond laser processing enables the series connection of solar cells within solar modules.

Likewise, lasers can be used as a precise heat source for selective thermal post-processing of functional layers. This enables the use of materials that require high conversion temperature on mechanically flexible polymer substrates.

For these projects, state-of-the-art fs- and ns-laser systems are employed, including an optical amplifier to generate a wide range of wavelengths.

#### Tasks

- Fabrication of organic solar cells in an all-new cleanroom.
- Optimization of the fs-laser structuring process of functional layers using different wavelengths.
- Characterization of the layers and the structuring processes.
- Optimization of thermal post-processing on flexible substrates.
- Development of a microscopic understanding of the fs-laser ablation and the ns-laser annealing.

#### Requirements

- Basic knowledge in the field of semiconductor and optics.
- Working both independent as well as in a team.
- Skillful and responsible use of technical equipment.
- Knowledge about laser processing is a strong advantage.

#### Research area

Organic photovoltaics

#### Orientation

Experimental

#### Background

Electrical engineers  
Mechanical engineers  
Optics and photonics

#### Entry Date

Any time

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