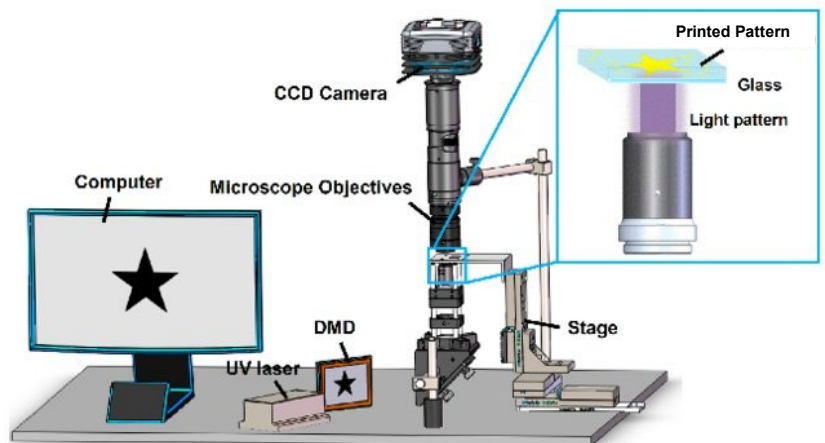


Master Thesis/HiWi: Light-Printed Electronics by Patterned Illumination from Digital Mirror Devices

Digital Mirror Device (DMD) offer attractive options for photolithography approaches in surface lithography, enabling maskless and digital processes to produce arbitrary light patterns for localized



photochemical modifications. The project will have to intertwined aspects: (1) the design and assembly of a DMD based lithography setup consisting of a movable sample stage, the DMD and auxiliary optics and programming of the relevant controls (all hardware parts will be commercially existing components, programming will be in high-level languages, no low-level programming needed). (2) Development of nanoparticle inks with matching photo-active coupling chemistry. In this part, chemical modifications of nanoparticles and printing substrates with different photochemical linkers and ink composition in regard to solvents will be screened in automated setups. The assembled photo-lithography setup will then be used with the nanoparticle inks to create electrode patterns to characterize the electronic performance (e.g. resistance of printed metal lines).

Start: as soon as possible / Post date: 07/2024

The following skills are beneficial but not mandatory (can be learned):

- Experience in device characterization of electronic devices
- Experience in working in a chemical laboratory
- Hands-on mentality

This thesis is adapted for students from the following courses:

- **Electrical engineering**
- **Physics**
- **Material sciences**

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