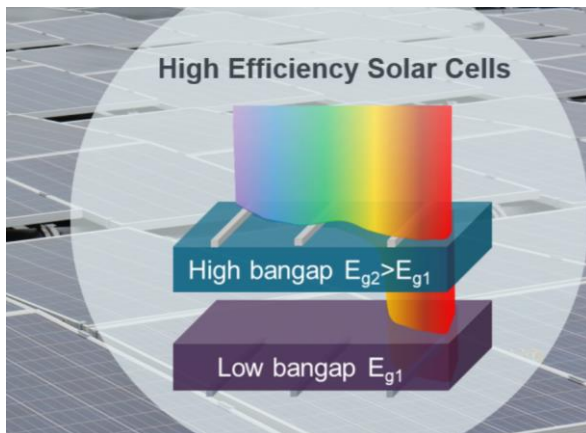




## Investigation of a transparent conductive front contact based on silver nanowires for perovskite/Si tandem solar cells

Perovskite/Si tandem solar cells have the potential to reach high sunlight-to-electricity conversion efficiencies and are on the roadmap of most Si photovoltaic module manufacturers. Advantages of perovskite-based tandem solar cells are the band gap tunability up to 2.3 eV and low fabrication costs. Carrier collection on the front side of the solar cell requires a transparent conductive front electrode and metal grid. Typically, thin film solar cells employ an up to 300nm thick, conductive indium tin oxide (ITO) layer, deposited by sputtering. A promising alternative are films based on Ag-nanowire (Ag-NW) networks, which can be fabricated by solution-based processes and which eliminate the risk of sputter damage in the solar cell.

The key task in this Forschungsarbeit/master thesis, will be the fabrication and characterization of transparent front electrodes based on AgNWs. The layers will be first deposited and analyzed on glass and later tested in solar cells.



### Tasks:

- Deposition of AgNWs on glass substrates with spray pyrolysis technique
- Optical and electrical characterization of the produced films
- Evaporation of metal grids on the produced front contacts

### Requirements:

- Fundamental photovoltaics and optoelectronics knowledge
- Interest in lab work and device manufacturing

**The thesis could be started from 01.10.2021.** You should be able to work in systematic manner. The report can be written **in German or in English.**

If you are interested, please feel free to contact:

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