

**Universität Stuttgart**

**Institut für Photovoltaik (ipv)**

**Neue Materialien**



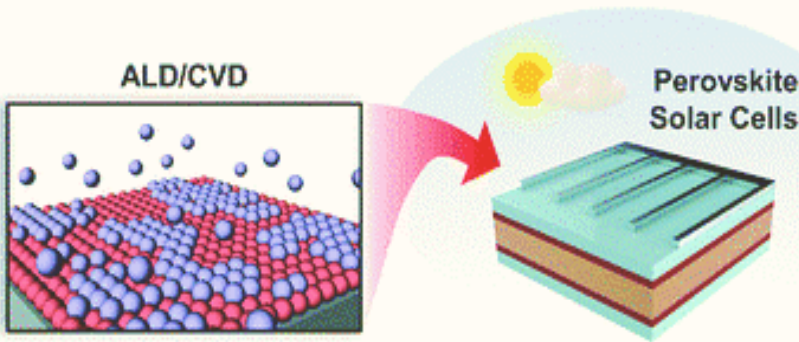
**Masterarbeit**

# Atomic Layer Deposition for **Perovskite Solar Cells**

A great progress in power conversion efficiency (PCE) up to 26% has rendered metal-halid perovskite solar cells (PSCs) the new breakthrough in the field of photovoltaics. Thin films of perovskite are deposited in a material stack optimized for energy conversion. However, in order to minimize current losses, the surface defects of perovskite must be mitigated.

In order to remove surface defects we investigate an Atomic Layer Deposition (ALD) based strategy to treat the surface of Perovskite films.

This process allows for highly controlled addition or removal of material from a surface at the atomic scale. It requires alternating steps of applying and removing chemical reactants to achieve precise, low temperature and uniform deposition. ALD is among the most used techniques to treat PSCs, due to its scalability potential towards commercialization of high performing and stable devices.



**Tasks:**

- Fabrications of Solar Cells
- Atomic Layer Deposition
- J-V analysis of solar cells
- Chemical and structural characterization

**References**

Raiford et al., *Energy Environ. Sci.*, 2020, 13, 1997

Kanarik et al., *J. Phys. Chem. Lett.* 2018, 9, 4814–4821

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

If you are interested, contact:

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