



Method tags: Colloidal nanocrystals synthesis, single-atom (photo)deposition, photo(electro)catalysis, thin film deposition, solar cells fabrication

Scientific tags: Materials science, lead-free perovskites, perovskite-inspired materials (PIMs), electron microscopy, laser induced spectroscopy, MAX IV

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Global fossil fuel energy crisis highlights the urgency of renewable energy development such as abundant solar energy. Maning Liu's group focuses on the synthesis and understanding of novel functional semiconductor materials, which can convert solar energy into other forms of energy, e.g., electricity (photovoltaics) and solar fuels (hydrogen evolution), achieving a sustainable development mode. The group's current focus is on lead-free halide perovskites or perovskite-inspired materials both in the form of bulk- (thin film) and nanocrystals.

Potential master thesis projects can be designed from synthesis (solution process and colloidal synthesis) and characterization (primarily by photochemical and photophysical measurements) to fabrication of eco-friendly, low-cost, and high-performance light-converting devices (primarily for solar cells and photoelectrochemical cells).