

# Bachelor of Science Thesis topics

## Surface Science Research Group

Photonics Laboratory

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Bachelor thesis topics in surface science typically comprise of analysing real experimental data, discussing the results and comparing them to literature. The topics can be related to e.g. synchrotron light, atomic layer deposition or artificial photosynthesis.

MAX IV Laboratory (Lund, Sweden), the brightest synchrotron light facility in the world

Deposition of nanometer scale thin films for e.g. laser and solar cell applications

Topics:

- Photoelectron spectroscopy
- X-ray absorption spectroscopy
- Electron structure

Topics:

- Thin film coatings for corrosion protection
- Light absorption and conductivity of amorphous TiO<sub>2</sub>
- Crystallization of amorphous TiO<sub>2</sub>



Conversion of solar energy into green fuels through photoelectrochemical reactions. For example, splitting H<sub>2</sub>O molecules into H<sub>2</sub> and O<sub>2</sub> or reducing CO<sub>2</sub> into hydrocarbons

Topics:

- Solar fuel production
- Improving the properties of photocatalytic materials
- Modification of surface states