



## **Absolicon – The obvious choice for your Master Thesis Project**

*Global warming is the biggest threat to society as we know it and the dominant cause for this is our consumption of fossil fuels. The hype around electric cars and solar cells suggests that most people are open to the idea of change towards more renewable options. However, what is often overlooked is the fact that the energy usage for heating and cooling (thermal energy) equals that of electricity and transport combined<sup>1</sup>. You can help solve this part of the climate challenge! Absolicon Solar Collectors is a stock market listed company in Härnösand with 25 employees working towards changing heat production in industry from fossil to solar. We sell the Absolicon T160 the most efficient solar concentrating collector in the world, producing heat up to 160°C. This makes it suitable for industrial process heat and district heating.*

## **Solar Selective Surface made from Carbon Nanotubes**

The most important component in any solar collector is the receiver. This is the component that absorbs the solar irradiation and converts it into useful thermal energy. For the receiver to do this efficiently it has to have a so called solar selective surface. This is a surface with a high absorptance over the solar spectra (300-2500 nm) but a low emittance over the infrared spectra (> 2500 nm). These surfaces are generally produced by applying an absorbing, but thin, coating on a reflective metallic surface. The thin coating absorbs the short wavelength solar irradiation without interfering (to much) with the inherently low emittance of the underlying metallic surface.

The premise for this project would be to produce such a coating by spray coating a layer of carbon nanotubes (CNTs) on a metallic substrate. There is evidence in literature that this is possible, but it is not an extensively researched area giving room for breaking new ground. The project would be conducted in close collaboration with the nano for energy group at Umeå University, a group with long experience of synthesis of CNTs and making dispersions suitable for spray coating. The initial step of the project would concern spray coating commercially available CNTs to produce homogenous coatings. In the second step there is room for customization of the CNTs in collaboration with the research group in order to optimize the coating in terms of optical properties.

If you are interested in material science with a connection to solar energy, this is the project for you.

### **For more information contact:**

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