

Ph.D. Position Available (Physics/Chemistry):

One fully-funded PhD position is available (application due in July 2024, start date November 2024) under the supervision of **Prof. Emanuele Marino** at the Department of Physics and Chemistry of the University of Palermo.

The project will support the successful candidate for 3 years, leading to the completion of a Ph.D. thesis in physics in the field of energy transition/sustainability. The project stems from a partnership with **Solarfoil**, a Dutch startup specialized in using fluorescent nanoparticles to optimize the solar spectrum for the needs of plants and microalgae.

The position will take place in Palermo (Italy) within the Laboratory "Roberto Boscaino" of Advanced Materials of the Department of Physics and Chemistry of the University of Palermo. **The successful candidate will be required to spend 6-12 months in Amsterdam** (The Netherlands) under the supervision of Dr. Arnon Lesage and Prof. Peter Schall.

Project Description: Boosting The Efficiency of Photosynthesis by Solar Shaping

Plants use photosynthesis to store solar energy in the form of chemical bonds. However, the efficiency of this process depends on the color of light, suggesting the possibility of using spectrally-optimized sources to boost plant growth. **In this project, the successful candidate will use inorganic fluorescent nanoparticles to focus the solar spectrum into a spectral region that targets the photosynthetic process more efficiently.** Next to the synthesis and ordinary characterization of cutting-edge nanomaterials, at SolarFoil the candidate will have the opportunity to test the influence of their optical performance directly on algae or plant growth.

The following topics will be of interest:

- Use of non-toxic materials;
- Use of deep-red (670-680 nm) emitting materials;
- Use of materials that redirect (absorb/reflect/scatter) photosynthetically-inactive radiation (infrared light) while transmitting photosynthetically-active radiation (visible light);
- Use of materials that funnel light in the forward direction, limiting optical losses.

Candidate Profile:

The interested candidates should obtain a master's degree in physics, chemistry, materials science/engineering or related discipline by November 1st 2024. The candidates are expected to have a strong experimental background in soft or hard condensed matter physics or biophysics, and an interest in exploring wet chemistry and photophysics. English language proficiency is compulsory.

How to Apply:

Applications must be submitted to Prof. Emanuele Marino (Emanuele.Marino@unipa.it) as soon as possible and before June 30th, 2024, with the subject line: "Application for PhD Position Solar Shaping for Photosynthesis". All applications must include an up-to-date Curriculum Vitae, motivation letter, contact information of 2 referees who can be contacted for recommendation letters.