

## The Internship Project

Objective: Determining optimal DDAC operating conditions dependent on geographical location

Skytree builds technology for the Decentralized Direct Air Capture (DDAC) of CO<sub>2</sub>. As part of that technology, we design, develop, and build filters for CO<sub>2</sub> capture using a sorbent material. To optimize the performance of this porous functional material, it is vital to optimize both material characteristics and operating parameters. For example, minimization of the diffusion boundary resistance (mass transfer limitation) and the internal diffusion resistance at the pore level (kinetic limitation) by tuning material pore structure and reactor flow conditions.

To that end, this internship project focuses on understanding the mass transfer balance on the particle level, as well as on the macroscopic scale. This requires mapping of the pore structure of the sorbent material and subsequently defining the external and internal diffusion rates based on current operating conditions. Additionally, sorbent synthesis factors, such as shape & size, and operating conditions, such as CO<sub>2</sub> concentration and humidity, should be taken into consideration. Based on these inputs, the candidate should be able to provide a description of mass transfer phenomena during CO<sub>2</sub> ad- and desorption. The candidate will perform both a theoretical and experimental evaluation of the Skytree technology and is encouraged to provide recommendations on, e.g. sorbent material synthesis and operating conditions or filter media design.

### Candidate Requirements:

- Natural Sciences (Physics, Mathematics, Chemistry, etc.)
- B.Sc. completed; current M.Sc. students or recent graduates

### Internship Conditions at Skytree

32 - 40 h/week

Min. 3 month duration

450 Euro/month

We treat all interns as members of the team and expect them to actively participate in Skytree's meetings and activities.

Please submit your application via <https://skytree.eu/careers/> or directly to [annsophie@skytree.eu](mailto:annsophie@skytree.eu)