

PhotonHub Demo Centre

Photovoltaics: Discovering the solar cell

Course Provider

Institute of Electronics, Microelectronics and Nanotechnology (IEMN)

CNRS (Villeneuve d'Ascq)

France

Course Overview

Photovoltaics is a key technology in the panel of renewable energy sources. It allows direct supply of electricity wherever you are and its managing can now be easily handled for home or industrial use.

This one-day training course is dedicated to provide the fundamentals of the basic element supporting the photovoltaic domain, i.e. the solar cell.

The course will be mainly shared into two sessions; 1) first one will be more like a tutorial on the fundamentals of a solar cell: what are its basic working principles, what are its different variants, what its specifications are related to,... 2) second part will be a hands-on session dedicated to measure the characteristics of solar cells and correlate those measurements to the specifications that are usually provided for solar cells and panels.

Course participants should so gain a pragmatic understanding of a photovoltaic energy source.

Target Audience

No particular knowledge of physics or photonics is required but a basic technical background is an asset. The course is ideally suited to those planning to implement photovoltaics and so learn how its basic element is working.

Expected Outcomes

- 1) Understanding of the basic working principles of solar cells
- 2) Figuring out their performances and limitations
- 3) Distinguishing the different families of solar cells
- 4) Characterizing solar cells (hands-on activity)

Course Schedule

Time	Demo Activity
09:00 - 9:30	Course Introduction & Participant's presentation
9:30 - 10:50	Tutorial: Fundamentals of solar cells: how it works?
11:10 - 12:30	Practical: Solar cell variants: what are the differences?
14:00 - 15:20	Demo 1: Silicon solar cell characterization (hands-on)
15:40 – 17: 00	Demo 2: Thin film solar cell characterization (hands-on)
17:00 – 17:30	Follow-Up Questions & Close

Course Location, Schedule & Cost

- Course Location: IEMN, Villeneuve d'Ascq (Lille)
- Course Schedule: (first course planned December, 1st 2021)
- Number of people (Groups of max. 10 individuals)
- Course Cost (250 Euros per person, includes catering and project consumables)



Further Information

- mathieu.halbwax@iemn.fr
- jean-pierre.vilcot@iemn.fr
- www.photonhub.eu/euphotonicsacademy



Course Material (technical hand-outs)

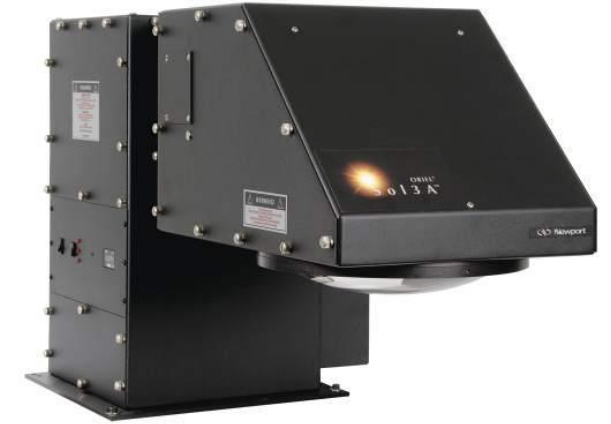
- Tutorials in electronic form (paper form on request)
- Notebook for hands-on session

Course Trainers

Course Director: Mathieu Halbwax

Course Manager: Jean-Pierre Vilcot

Demo 1 & 2: Vanessa Avramovic



Solar simulator

Keywords

Renewable energy sources, Photovoltaics, Solar cells, Silicon solar cell, Thin film solar cell, Solar cell characterization, Solar cell efficiency.

Relevant Technology & Application Domain

Technology: Free-Space Photonic Components & Systems

Application: Energy