After the great success of the previous editions of the PV School in 2018 (*Physics of Solar Cells: from basics to nanoscience*), 2020 (*Physics of Solar Cells: from basic principles to advanced characterization*), and 2022 (*Physics of Solar Cells : from basic principles to material science*) in the famous Les Houches School of Physics, **we are proud to announce the fourth edition of the PV School:**

Physics of Solar Cells: from basic principles to high performance
Les Houches School of Physics, 12-17 May 2024, France
https://sunlit-team.eu/pv-school-2024/

This school will cover the physics of solar cells, from basic principles to advanced concepts, with a focus on high performance. It will open on a series of lectures devoted to the basic physics for solar cells (thermodynamics, opto-electronic properties of semiconductors…) setting a frame shared by all materials and technologies. It will then turn to the diversity of challenges facing the field (high conversion efficiency, low material consumption, high throughput processes, low degradation rate, tailored mechanical and optical properties), bridging the gap between fundamental and applied research.

Overall, we aim to challenge the notion of "high performance" in PV: what does it mean? How do PV technologies perform?

List of lecturers: Marika Edoff (Uppsala University, Sweden), **Stefaan de Wolf** (KAUST), **Jenny Nelson** (Imperial College, UK), **Uwe Rau** (to be confirmed, Forschungszentrum Jülich, Germany), **Emmanuelle Deleporte** (LUMIN, ENS Paris-Saclay), **Jean-Francois Guillemoles** (IPVF, CNRS, France), **Amaury Delamarre** (C2N, CNRS, Université Paris-Saclay).

The target audience is young researchers (PhDs, post-docs) as well as senior scientists and research engineers new to the field, or wishing to enlarge their knowledge in material science and devices for PV.

Organized by the CNRS and IPVF:
- Stéphane Collin (C2N, CNRS, Univ. Paris-Saclay)
- Nathanaëlle Schneider (IPVF, CNRS)
- Andrea Cattoni (Politecnico di Milano, Italy)
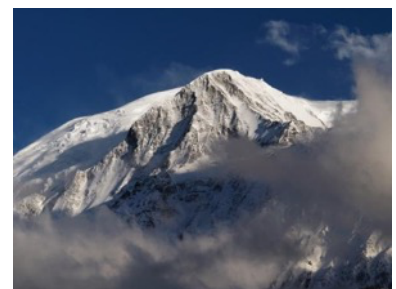- Daniel Suchet (IPVF, Ecole Polytechnique)

with the valuable contribution of Jean-François Guillemoles (IPVF, CNRS).

Contact: mailto:pvschool2024@c2n.upsaclay.fr

School website: *https://sunlit-team.eu/pv-school-2024/*

Applications must be received by 19 February 2024: https://sunlit-team.eu/pv-school-2024/application/

Financial support: The PV School 2024 is supported by the CNRS, the Center for Nanoscience and Nanotechnology (C2N), the Institut Photovoltaïque d'Ile-de-France (IPVF), the E4C Interdisciplinary Center and the FedPV. It is hosted by Les Houches School of Physics.

Program (can be subject to changes):

Lectures will begin on Monday morning (9:00) and end Friday noon (12:00). Two poster sessions will be organized, and daily tutorials will be proposed.

The goal of this program and the school is to build on basic science to challenge the notion of high-performance in PV, and the performance of each technology.

Lectures – day#1-day#4

Basic PV Science – day#1

PV is at the crossroad of many scientific fields, where similar questions can be addressed in different terms. The first lectures of the week aim at building a shared ground on which further presentations will be carried. Starting from a most simple solar cell (Shockley-Queisser limit), non-idealities are progressively introduced to highlight some of the main issues faced by every PV technology. Transverse notions, such as absorptivity, transport, lifetime, selectivity and reciprocity, will be introduced and linked to solar cell performances.

PV technologies and performance indicators – day#2-day#4

The PVSchool will then turn to the notion of "high performance" and the diversity of challenges it covers (high conversion efficiency, low material consumption, high throughput processes, low degradation rate, tailored mechanical and optical properties), bridging the gap between fundamental and applied research. These challenges will be showcased on major PV technologies (Si, III-V, CIGS, CdTe, perovskite, organic) by renowned experts of each field.

Active learning – day#1-day#5

From day #1, students will be divided in five groups. Each group will be assigned a "high performance" indicator to work on. Based on lectures, tutorials, discussions among attendees (students, lecturers), each group will give a short overview and comparison of PV technologies on their indicator.

Tutorials – day#1-day#5

A daily slot will be devoted to tutorials. Working in small groups under the supervision of lecturers, participants will have the chance to put lectures in practice with hands-on problems inspired by research situations.

Poster session – day#1, day#2

Two poster sessions will give participants the occasion to present their activities (research topics, experimental platforms, projects…). Authors are invited to include an "open problem" section in their poster, to share unsolved issues and possibly benefit from discussions with other participants and lecturers. Furthermore, a poster-related game will be organized to encourage participants to discover new topics.