



COLLOQUIUM FÉDÉRATION FRIEDEL JACQUINOT

Mercredi 5 Février 2025 - Amphi A1 du Batiment Hbar

12h00 : Lunch box

12h30 : Séminaire de Albert Polman (NWO institute AMOLF)

Photonic solutions for improved photovoltaics

The mitigation of climate change requires major transformations in the ways we generate energy and operate technologies that release CO_2 . Photonic concepts and novel light-driven technologies provide many opportunities to mitigate CO_2 emissions, transforming our current modes of energy use into more effective and sustainable ones.

In this presentation, we focus on how to create photovoltaics with improved properties that have potential for large-scale implementation.

We then present a study on the nanoscale incoupling of light in textured perovskite/silicon solar cells, and show how optical Mie resonances create strong light inhogeneities in the tandem solar cell that can affect its performance.

I will also present the 900 M€ Dutch national research, innovation and industrial development program SolarNL, in which universities, research institutes, and companies work together to develop photovoltaics technology and industry to help create a fully sustainable energy generation system in our society by 2050.

Albert Polman is research group leader at NWO Institute AMOLF in Amsterdam, the Netherlands. He is professor of Photonic Materials for Photovoltaics at the University of Amsterdam and chairs the board of the national research, innovation and industrial development program SolarNL. Polman's research group focuses on nanophotovoltaics, the study of light management at the nanoscale to realize ultra-high efficiency solar cells. The group also designs optical metasurfaces for analog optical processing and develops cathodoluminescence spectroscopy as a super-resolution imaging technique for nanophotonics. Polman has won several awards for his work and is member of the Royal Netherlands Academy of Sciences and the Netherlands Academy of Engineering. He is co-founder of Delmic BV that brings an instrument for cathodoluminescence spectroscopy on the market that was developed in his group.











