PHYS-609

Modern photovoltaic technologies

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Cursus	Sem.	Type
Advanced Manufacturing		Obl.
Photonics		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Oral presentation
Workload	60h
Hours	**26**
Courses	17
Exercises	9
Number of positions	

Frequency

Every year

Remark

Next time June 25-29, 2018

Summary

A link between the fundamental physics, device operation and technological development of various solar cell technologies. Learning about all modern photovoltaic technlogies incl. industrially relevant wafer based silicon, thin film chalcogenide, III-V, multijunction, organic and hybrid solar cells.

Content

Day 1
1.1 Introduction, solar cell basics and operation, generations of solar cell technologies
1.2 CIGS solar cells
1.3 CdTe solar cells
1.4 III-V solar cells
1.5 Organic solar cells
Day 2
2.1 QD and Dye-sensitized solar cells
2.2 Perovskite solar cells
2.3 Crystalline Si2.4 Thin Film Silicon
Day 3
3.1 Light propagation and interferences in multilayer structures
3.2 Coherent and incoherent scattering for absorption enhancement

Keywords

photovoltaics, inorganic semiconductors, organic semiconductors, optics, light management

Learning Prerequisites

Recommended courses

Basic physics, basic chemistry, introduction to quantum mechanics