

# International Workshop on Nanomaterials for Energy Conversion, Emerging Photovoltaic and Optoelectronic Technologies

## (NEEPO-19)

### October 7 - 9, 2019

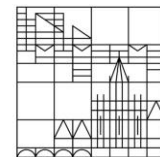
Jointly organized by

National Centre for Physics (NCP), Islamabad & University of Konstanz, Konstanz Germany

Venue: National Centre for Physics, Islamabad



Universität  
Konstanz



## Introduction

Renewable and cost effective energy supply is one of the biggest challenge which has impact on human and global environment. The solar energy conversion technologies are entering into a new regime with inception of novel device architectures, nanotechnology and new materials for the devices. In particular, recently halide perovskite materials demonstrated outstanding performance with >25 % power conversion efficiency. The next generation hybrid solar cells with utilization of nanomaterials and technology are evolving as strong candidates for the cost-effective solutions to the energy crises. However, several challenges are also associated with the scale-up production and commercialization of these technologies. This workshop will focus on the recent developments in the field and challenges associated with the solar energy conversion, next generation photovoltaic and optoelectronic devices. The aim of this workshop is to gather scientists and engineers working in the relevant fields to discuss progresses, challenges, and future directions of emerging concepts in the field of photovoltaics and optoelectronics.

## Topics

- Basics and recent developments in the field of solar energy conversion and solar cells
- Third generation solar cells, in particular developments in the field of the Perovskite solar cells and optoelectronics; their fabrication and characterization
- Metal oxide semiconductors for hybrid solar cells
- Nanostructured, 1D, 2D, and 3D absorbers and charge transport layers
- Engineered nanostructures for solar energy conversion
- Advanced techniques for characterization of energy materials and devices
- Interfaces and interfacial modifications in hybrid solar cells
- Defects and degradation of hybrid perovskite solar cells
- Water splitting and hydrogen generation using nano-architectures
- Two dimensional materials and their applications
- Emerging concepts in photovoltaics and optoelectronics

## Participation

Research students, post-doctoral researchers, faculty members and scientists/engineers who are actively involved in the related research areas are encouraged to apply for participation and presentation (oral or poster). The travel expenses of the participants shall be borne by their parent institutes. Partial travel assistance may be provided to selected outstation student participants and speakers on merit basis. Shortlisted national participants will be intimated during third week of September 2019. There is no fee for foreign participants however they will have to arrange their travel expenses.

## Best Poster Presentation Prize

To encourage the participation of young researchers/ students in the field, poster prizes will be awarded to three best presenters.

## Registration Fee

Students: Local = Rs. 1000/-, Outstation: Rs. 2000/-  
Employees: Local = Rs. 1500/-, Outstation: Rs. 2500/-

## Technical Program

For further information and technical program please consult:

<http://www.ncp.edu.pk/neepo-2019.php>

## For Further Information

Activity Secretariat: [caad@ncp.edu.pk](mailto:caad@ncp.edu.pk)  
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## Technical Committee

Dr. Safeer Ahmed QAU  
Dr. Naila Jabeen NCP  
Dr. Ghulam Hasnain QAU  
Dr. Shahzad Abubakr NCP

## Management Committee

Mr. Rizwan Ali Khan  
Mr. Abdul Hamid  
Dr. Muhammad Arshad

## Advisors

Dr. Hafeez Hoorani (NCP)  
Dr. Sara Qaisar (NCP)  
Dr. S. K. Hassanain (COMSTECH)

## Coordinators

Prof. Lukas Schmidt-Mende (University of Konstanz)  
Dr. Muhammad Sultan (NCP, Islamabad)  
Dr. Azhar Fakhruddin (IMEC, Belgium)

## List of Speakers (Tentative)

**Prof. Lukas Schmidt-Mende\*** (Uni. Konstanz, Germany): Perovskites - Defects and Interfaces  
**Prof. M. Khaja Nazeeruddin\*** (EPFL, Switzerland): Developments and prospects of perovskite solar cells  
**Prof. Shengzhong Liu** (Shaanxi Normal University China): High efficiency perovskite solar cells and optoelectronic devices  
**Dr. M. Adib Ibrahim** (Uni. Kebangsaan Malaysia): Novel nanomaterials for photovoltaic applications  
**Dr. Azhar Fakhruddin\*** (IMEC, Belgium): Light from perovskite crystals  
**Prof. Dr. Ahmed Shuja** (IIUI): Revisiting the materials, devices and systems matrix for applications in PV solar and optoelectronics  
**Dr. Azhar Iqbal** (QAU): Ultrafast charge dynamics at interface of hybrid materials  
**Prof. Muhammad Hassan Sayyad** (GIKI): Commercialization of next generation solar cells  
**Dr. Khurram Joya** (KFUPM Saudi Arabia): Functional nanomaterials for energy applications  
**Dr. Zafar Hussain Ibupoto** (Uni. Sindh, Jamshoro): Metal Oxide Nanostructures for energy applications  
**Dr. Safeer Ahmad** (QAU): Water splitting  
**Dr. Saifullah Awan** (NUST): Physics of metal-oxide semiconductors  
**Dr. Gul Rehman** (QAU): Theoretical calculations for energy materials and devices  
**Dr. M. Zahir Iqbal** (GIKI): Two dimensional materials and their application  
**Dr. Naveed Zafar Ali** (NCP): Conceptual design of novel framework materials for Fuel Cell technology  
**Dr. S. Qamar Hussain** (Comsats Uni. Lhr): Advanced light scattering techniques for thin-film solar cells  
**Dr. Muhammad Usman** (GIKI): GaN-based light-emitting diodes  
**Dr. Arbab M. Toufiq** (Hazara Uni.): Nanomaterials for high power fiber lasers applications  
\*Video lectures

## Workshop Secretary

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DAAD

Deutscher Akademischer Austausch Dienst  
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The Abdus Salam  
International Centre  
for Theoretical Physics