

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

## (NEEPO-20)

September 7 - 8, 2020

Organized by: National Centre for Physics, Islamabad



### Introduction

Renewable and cost-effective energy supply is one of the biggest challenges impacting global environment and human life. With the innovation in the growth techniques, and the emergence of novel nanomaterials, the solar energy conversion and electronic technologies are entering into a new regime offering the potential of solution processability and flexibility for next-generation smart technologies and IoT. Amongst them, halide perovskite materials demonstrated outstanding performance with >25 % power conversion efficiency. The next generation hybrid solar cells based on nanomaterials and technology are evolving as strong candidates for the cost-effective solutions to the energy crises. However, there are several accompanying challenges *vis-a-vis* the scale-up production and commercialization of these technologies.

National Centre for Physics (NCP) regularly organizes the “International Workshop on Nanomaterials for Energy Conversion, Emerging Photovoltaic and Optoelectronic Technologies (NEEPO)”. NEEPO-20 is the third in this series and owing to COVID-19, this will be a ‘virtual workshop’. NEEPO-20 will focus on (1) the basics, (2) the recent developments in the field and challenges associated with the nanomaterials based solar energy conversion and (3) next generation photovoltaic and optoelectronic devices. One session of the workshop will be exclusively organized for young researchers. An online poster session will be also be organized.

As always, the workshop aims to provide the local research students, scientists and engineers a platform to interact with world renowned scientists in the field.

### Foreign Speakers and Topics (Tentative)

Speaker	Institute	Topic
Junsin Yi	Sungkyunkwan University, South Korea	High efficiency Si solar cells: Recent developments and outlook
Michael Saliba	University of Stuttgart, Germany	Perovskite Solar Cells: The Versatility of Multicomponent Perovskites
Lukas Schmidt Mende	University of Konstanz, Germany	Nanostructures for Energy Conversion Applications
Speaker TBD		Introduction to semiconductor devices fabrication
Syed Ghufuran Hashmi	University of Oulu, Finland	Printable Photovoltaic Devices
Kong Liu	Chinese Academy of Sciences, China	Perovskite Si Tandem Solar Cells
Azhar Fakhruddin	University of Konstanz, Germany	Perovskite Based Optoelectronic Devices

### Participation

Research students, post-doctoral researchers, active faculty members and scientists/engineers are encouraged to apply. A limited number of slots are available in the oral presentation session for young researchers.

Maximum benefit will be drawn by applicants having prior basic background knowledge of the field; young researchers and research students working in the field will be facilitated on priority.

### Registration

There is no fee for workshop registration. Only relevant registered participants will be allowed to attend the workshop. **Online registration** can be done through the following link:

<http://indico.ncp.edu.pk/indico/conferenceDisplay.py?confid=154>

Candidates will be shortlisted based on the relevance of their research area to NEEPO-20, and the availability of IT resources at NCP. Shortlisted participants will be intimated during last week of August 2020.

### Important Dates

Submission of Abstract for Oral/ Poster presentation: August 21, 2020

Confirmation of Abstract Oral/Poster: August 26, 2020

General Participation: August 26, 2020

Confirmation of Participation: September 02, 2020

Video talk/Poster Submission: September 02, 2020

### Advisors

Dr. Hafeez Hoorani (NCP)

Dr. Sara Qaisar (NCP)

### Topics of Workshop

- Recent developments and fabrication of semiconductor devices
- 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
- Metal oxide semiconductors for hybrid solar cells
- Nanostructured, 1D, 2D, and 3D materials as absorbers and charge transport layers
- Water splitting and hydrogen generation using nano-architectures
- Emerging concepts in photovoltaics and optoelectronics
- Carrier selective contacts for solar cells
- Perovskite Si Tandem solar cells
- Printed electronic opto-electronic and optoelectronic devices

### Workshop Secretary

Dr. Muhammad Sultan

Email: [sultan@ncp.edu.pk](mailto:sultan@ncp.edu.pk)

Tel: 051-2077300 Ext. 408, 0345-5893398

Nanoscience and Technology Department

National Centre for Physics

### For Further Information

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

Collaborations & Academic Activities

Department (CAAD)

National Centre for Physics, Shahdra Valley Road, Islamabad, Pakistan

Tel: 051-2077363, Fax: 051-2077342

### Deadlines

Abstracts Submission: August 21, 2020

General Participation: August 26, 2020