



**Department of Physics**  
**Faculty of Science / University of Peradeniya**



**Dr. Karunananda Pemasiri**

*B.Sc. (Univ. of Perad.), MS, Ph.D. (Univ. of Cincinnati, USA)*

**Senior Lecturer**

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## About Me

I received my first degree (BSc Special Degree in Physics) in 2004 from the University of Peradeniya. I did postgraduate studies at University of Cincinnati, USA from 2006 and received the PhD in Physics specializing on "Optical & Electrical characterization of semiconductor nanowires" in 2013. Serving as a Senior Lecturer in the department from 2014. My research interests focus mainly on semiconductor material research.

## Higher Education Qualifications

🎓 **PhD**

University of Cincinnati  
USA  
(2013)

🎓 **MSc**

University of Cincinnati  
USA  
(2009)

🎓 **BSc**

University of Peradeniya  
Sri Lanka  
(2004)

## Awards, Scholarships, Memberships & Fellowships



URC Summer Fellowship 2012, University of Cincinnati (06/2012)



Henry Laws Research Fellowship 2012, University of Cincinnati (06/2012)



URC Summer Fellowship 2010, University of Cincinnati (06/2010)



Henry Laws Research Fellowship 2010, University of Cincinnati (06/2010)



Outstanding Poster in Physical Science & Engineering- Graduate poster Forum 2010, University of Cincinnati



University Prize for Academic Excellence, University of Peradeniya (12/2004)



Dr. C.A. Hewawitharana Memorial Prize For Physics, University of Peradeniya (12/2004)



Prof. A.W. Wolfendale Prize for Physics, University of Peradeniya (2002/2003)



Prof. V. Appapillai Prize for Physics, University of Peradeniya (10/2002)









University Scholarship (Physical Science), University of Peradeniya (11/2001)

## Positions Held

-  Senior Lecturer, Department of Physics, University of Peradeniya, Sri Lanka.- (December 2014 - to date)
-  Chiarmman - Faculty Safety Committee, Faculty of Science- (2018 - to date)
-  Coordinator, Internal Quality Assurance Cell of PGIS- (2020 - to date)
-  Visiting Lecturer, Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka.- (January 2015 - to date)
-  Temporary Senior Lecturer, Department of Physics, University of Peradeniya, Sri Lanka.- (February 2014 - December 2014)
-  Graduate Assistant, Department of Physics, University of Cincinnati, Cincinnati, U.S.A.- (September 2016 -August 2013)
-  Senior Student Counselor, Department of Physics, University of Peradeniya, Sri Lanka- (January 2018 - December 2020)
-  Co-coordinator for MSc in Nanoscience & Nanotechnology- (May 2017 to January 2022)
-  Faculty representative to University Safety Committee- (2017 - to date)
-  Coordinator for MSc in Physics of Materials- (February 2022 - to Date)




## My Teachings

-  PH304: Reality - 2021/22 - SEM I
-  PH403: Classical Mechanics - 2021/2022 SEM I
-  PH502: Electron Theory in Solids - 2022/2023 SEM I
-  PHY1103: General Physics I - 2021/2022 - SEM I
-  PHY2102: Mechanics & Fluid Dynamics - 2021/2022 SEM I
-  PHY2911: General Physics Laboratory I - 2021/2022 SEM I

## Research Interests (Research Fields/ Projects)

My research interests focus mainly on semiconductor material research such as (1) Optical & electrical characterization of semiconductor nanostructures, (2) Semiconductor solar cells, (3) Thermoelectric materials & devices. Also, I am interested in Physics education research.

## Ongoing Research and Projects

-  **Theoretical Modelling of Small and Wide Bandgaps in Thermoelectric Generators, with Special Attention on Schottky Barrier**
-  **Investigation of graphite/graphene as back contact material for thin film solar cells**
-  **Development of efficiency and stability of photoelectrochemical solar cell by improving appropriate gel polymer electrolytes**

## Key Publications



Journal of Applied Physics - (2015)

Quantum confinement of excitons in wurtzite InP nanowires,



Nano Letters - (2009)

Carrier dynamics and quantum confinement in Type-II ZB-WZ InP nanowire homostructures,

## Conferences



**APS March Meeting**

**HELD AT :** Baltimore, MD - (2013)

**TOPIC :** Photocurrent Spectroscopy of ZB, WZ InP nanowire Ohmic devices (Oral)



**MRS Spring Meeting**

**HELD AT :** San Francisco, CA - (2012)

**TOPIC :** Photocurrent spectroscopy of ZB, WZ InP Ohmic nanowire devices (Oral: AA8.9)



**APS March Meeting**

**HELD AT :** Dallas, TX - (2011)

**TOPIC :** Photocurrent Spectroscopy of single ZB, WZ InP Ohmic Nanowires devices (Oral)



**Graduate Poster Forum**

**HELD AT :** University of Cincinnati, Cincinnati, OH - (2010)

**TOPIC :** Photocurrent Spectroscopy of single ZB, WZ InP Nanowires at Low Temperature (Poster)



**APS March Meeting**

**HELD AT :** Portland, OR - (2010)

**TOPIC :** Photocurrent Spectroscopy of single ZB, WZ InP Nanowires at Low Temperature, (Oral)

## My Publications

Please goto the website.

<https://sci.pdn.ac.lk/physics/staff/Karunananda-Pemasiri>