

Good Morning,
You are invited to attend our weekly ECE Graduate Seminar.

Old Dominion University
College of Engineering and Technology
Department of Electrical and Computer Engineering

All lectures to be held at 3:00pm on Fridays online at

https://vs.prod.odu.edu/kvs/zoom/?cid=202120_ECE731831GraduateSeminarSpring2022VS_96353

For more information, contact Dr. Chung Hao Chen at (757) 683-3475 or email cxchen@odu.edu.

Friday, March 25, 2022 Seminar Topic:

"Recrystallization of Cu(In,Ga)Se₂ Semiconductor Thin Films via Metal Halides Treatment by Deewakar Poudel, Ph.D. Candidate in Department of Electrical & Computer Engineering at Old Dominion University

Abstract:

The advancement of low-cost, highly efficient solar cell devices is a major technological challenge demanding suitable materials and fabrication processes. Polycrystalline Cu(In,Ga)Se₂ (CIGS) appear to be one of the most suitable materials in thin-film photovoltaic technology due to its bandgap tunability, high absorption coefficient, and tendency to produce high-efficiency solar cells. High-quality CIGS materials fabricated via a three-stage co-evaporation process can convert primary materials into devices with power conversion efficiency above 23 %. Increasing the deposition rate and decreasing the deposition temperature, while maintaining high efficiency, is the major concern for the CIGS solar cells to compete with silicon-based technology and to allow their application on an industrial basis. A post-deposition treatment of the as-deposited films by alkali halides and selenium improve the devices to some extent. To further accelerate the microstructure evolution, we propose the recrystallization of CIGS thin films via metal halides vapor treatment as a fluxing agent, as one of the possibilities of producing high-quality CIGS thin films. It is of great interest to recrystallize CIGS, potentially decreasing the fabrication cost and improving the economic viability.



Bio:

Deewakar Poudel is a Ph.D. candidate in the Electrical and Computer Engineering department at Old Dominion University (ODU). He received his MS degree in Physics from Tribhuvan University, Nepal. Currently, he is working towards his dissertation under the supervision of Dr. Sylvain Marsillac at ODU. His research interest includes thin film photovoltaics and microelectronics devices.