

The Department of Mechanical Engineering
College of Engineering and Applied Sciences
Stony Brook University

Mechanical Engineering Seminar



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Lecture Title: Highly versatile CIGS thin film solar modules for transparent and flexible applications

Friday, March 09, 2018 at 1:00 PM, [Room 173 Light Engineering Building](#)

Abstract

Besides as mass production sources of electricity, solar cell technology is now finding opportunity in a variety of novel energy applications such as building- or transportation- integrated photovoltaics, military or customer electronics. To this end, CIGS thin film solar cell could be a suitable candidate due to high efficiency (>22.6%), high stability, low-cost and non-toxic processes. CIGS thin film architecture is more favorable to widely adjust aesthetic functions such as transparency, flexibility and coloring. However, since the new functions require use of transparent electrode or flexible substrate, significant metallurgical, mechanical and processing issues need be solved. In particular, reduced growth temperature of CIGS, better contact of CIGS with transparent electrode, and high durability on flexible substrate should be accomplished. In addition, the monolithic-integrated module structure, which CIGS architecture allows for, can provide a viable option to easily tune module design towards diverse applications by combining laser scribing technology. In this talk, the on-going efforts on the optimization of CIGS thin film materials, and laser scribing processes that enable transparent or flexible solar module fabrication, will be presented.

Biography

Dr. Jeung-hyun Jeong is currently a Principal Researcher and a Head of Photo-electronic Hybrids Research Center in Korea Institute of Science and Technology (KIST), Seoul, Korea. He received his BS, MS and PhD degrees in Materials Science and Engineering from Seoul National University, Korea (1995, 1997 and 2001), followed by postdoctoral researcher (2003-2004) at Massachusetts Institute of Technology (MIT), until he joined in KIST as a Senior Researcher in 2004. His research now focuses on chalcogenide thin-film materials, processes and its derived solar cells/modules, especially toward booming up their transparent or flexible applications.

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