


IUMRS-ICA2016

Invited speaker's information form

Presentation on Symp. of	M. Advanced Carbon Materials
Title of the presentation	Nano-Carbon Solar Cells
Name /title of the speaker	Shigeo Maruyama/ Professor
Affiliation	The University of Tokyo
City/ Country	Tokyo/ Japan
Mailing address	7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656
Telephone	+81-3-5841-6421
Email	maruyama@photon.t.u-tokyo.ac.jp
Abstract of the presentation	<p>A film of single-walled carbon nanotubes (SWNTs) can be a dual-functional layer as electron-blocking-layer and transparent electrode in various solar cells. We have demonstrated efficient SWNT/Si solar cells using dry-deposited high-quality SWNTs and honeycomb-structured SWNTs. Adequately doped mm scale single crystal graphene also exhibited the similar performance. The dual functionality is also demonstrated for organic and perovskite solar cells. For organic solar cells, the SWNT/MoOx/PEDOT:PSS layer was demonstrated as a dual functional layer replacing ITO and organic electron-blocking-layer. By replacing ITO, the flexible device can be easily</p>

	<p>demonstrated. Similar replacement of ITO was demonstrate for Perovskite type solar cells. On the other hand, It is also possible to replace electron blocking layer and metal electrode for both organic and Perovskite solar cells. This direction is promising for low cost device fabrication and semi-transparent solar cells.</p>
<p>Speaker's photo</p>	
<p>Brief biography of Speaker</p>	<p>I received Ph.D. in School of Engineering from the University of Tokyo in 1988. I worked as a research associate until 1991, as a lecturer for a year, as an associate professor from 1993, as a full professor from 2004, and as a distinguished professor from 2014 at the University of Tokyo. From April 2015, I also work as a cross-appointment fellow for Advanced Industrial science and technology (AIST). I joined Professor Richard Smalley group at Rice University as visiting fellow for about 2 years during 1989 through 1991. During this period, I started to study chemical physics of clusters, fullerenes, and carbon nanotubes. Later, I invented the new CVD technique of SWNTs from low pressure alcohol in 2002, so-called Alcohol Catalytic CVD (ACCVD). Current research topics are growth, optical characterization, thermal characterization and solar cell application of carbon nanotubes and graphene. I have served as program officer of Japan Society for the Promotion of Science (JSPS) during 2009-2012, and as the president of "<i>The Fullerenes, Nanotubes and Graphene Research Society</i>," since 2011. I also served as Director of <i>The Japan Society of Applied Physics</i> since 2014 and as Executive Director in 2015. I am an Editor of "<i>Nanoscale and Microscale Thermophysical Engineering</i>," and an associate</p>

	editor of " <i>Int. J. Heat Mass Transfer.</i> " I have published more than 200 ISI-listed papers which have been cited more than 7,900 times, resulting the h-index of 48 (Google Scholar shows 13,000 citations and h-index 60).
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