SOLAR QUEST

SEMINAR ANNOUNCEMENT

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High efficiency solar cells of 3rd generation: Bridging the gap from thermodynamics to real devices

DATE: Wednesday, October 6, 2010
TIME: 14:00 pm-15:30 pm
PLACE: Lecture Room, Building CCR, 5th Floor

ABSTRACT

There is no question about the merit of having high efficiency photovoltaic device. Most efficient solar cells are presently based on multijunction stacks. From present day 40% conversion efficiencies to the thermodynamic limit (~90%), there is still a lot of room for improvement. Examples of possible improvements will be presented. One of them is to go for high injection regime of operation of the device that can be achieved by improving the coupling of the solar cells to the incident radiation. When doing that, one normally runs into trouble for photocurrent collection due to large ohmic drops. A way around this problem through microstructuring the solar cells will be presented.

If high injection and charge collection can be handled, the physics of photovoltaic energy conversion as seen in standard devices can be altered and the devices could run under quite different principles. This path is explored as for instance in so called "hot carrier solar cell", whose principle will be presented along with experimental results supporting the feasibility of such devices.

Solar Quest Host: Assoc. Prof. Yoshitaka Okada, ext. 56501
Refreshments will be provided.

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