



SOLAR QUEST

SEMINAR ANNOUNCEMENT

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HOT CARRIER SOLAR CELLS: PRINCIPLES, DESIGN AND MATERIALS

DATE: Thursday, December 10, 2009

TIME: 1:30 pm-3:00 pm

PLACE: Seminar Room A-502
CCR Building, 5F

ABSTRACT

The concept of hot carrier solar cells is discussed in terms of carrier cooling, conditions of energy- and carrier-selectivity for the energy selective contacts (ESCs) and macroscopic device behaviour. From these findings, we carried out density functional calculations of diatomic molecules, with results used in an infinite diatomic chain model for estimating phononic properties of hot carrier absorber (HCA) materials. We evaluate phonon confinement as a function of structure size and intentional material mismatch, relating the accompanying constraints in electronic properties to the requirements of hot carrier absorbers. The evaluation of materials for HCAs and ESCs regarding their phononic, electronic, optical and structural properties provides us with a more detailed description of a practicable hot carrier solar cell. As a method for observing steady-state hot carriers we developed optically assisted IV of which latest measurement results will be shown.

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

