



SOLAR QUEST

SEMINAR ANNOUNCEMENT

Dr. Wladek Walukiewicz

Visiting Professor, RCAST, The University of Tokyo
Leader, Solar Energy Materials Research Group
Lawrence Berkeley National Laboratory
California, USA

HIGHLY MISMATCHED ALLOYS FOR INTERMEDIATE BAND SOLAR CELLS

DATE: Friday, February 5, 2010

TIME: 1:30 pm-3:30 pm

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

ABSTRACT

Highly mismatched alloys (HMAs) are new class of semiconductors whose electronic band structure is well described by the Band Anticrossing (BAC) model. The unique feature of these alloys is a possibility for an independent control of the band gaps as well as the locations of the conduction and the valence band edges. This talk will present fundamental concepts underlying the BAC model and discuss our recent work on a wide variety of HMAs that could be used for solar power conversion devices. In particular, I will discuss the progress in engineering and synthesis of semiconductor materials with narrow intermediate bands suitable for multiband solar cells. Most of the work focuses on group II-VI (ZnOTe) and group III-V (GaNAsP) HMAs. I will present most recent results demonstrating a first, single junction intermediate band solar cell fabricated using dilute group III-V nitride HMAs. Finally I will discuss the prospects of designing HMAs with properties suitable for solar water splitting devices.

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

