

# UNIVERSITY OF CALIFORNIA, DAVIS

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Re: Evaluation of Institute for Environmental Science and Technology (IEST) Activities

As per your request in your e-mail of April 7, 2011, the following is my evaluation of IEST activities during 2009-2011. First, I would like to express my appreciation for inviting me to the Advisory Board meeting on March 17, 2011 at Saitama University. Unfortunately, my visit to Saitama University did not materialize because of the unprecedented 3/11 Higashi-Nippon disaster. I wish to send my sincere sympathy to the Japanese people and hope that Japan will recover quickly with renewed strength.

It is a pleasure to review the activities of IEST because it appears to be functioning well and several important research and project activities have been successfully initiated since the establishment of IEST on April 1, 2009.

### Molecular Environmental Science Division

The highlight of this division activity is five and a half year research project awarded by JST CREST program. Recent studies suggest that the temperature rise in shallow groundwater is caused by global warming as well as heat-island phenomena. Further, with the recent increase in heat pump utilization, there is a high possibility that subsurface thermal disturbances will affect both groundwater quality and microbial ecosystems. Significant and pioneering concepts are expected to be developed on effects of thermal disturbances on microorganisms and their biodiversity, hydraulic and geo-mechanical properties, and the fate and transport of environmental impact chemicals in the subsurface. In addition, various research activities have been conducted in the areas of air pollutants/photochemical oxidants, plant biochemistry, and microbial metabolisms.

### Environmental Ecology Division

This division focuses on elucidating functions and response of ecosystems related to environmental impact in the context of sustainable environment. The research activities covered in this division is, however, much broader with molecular biology and cellular communication to classic limnology applicable to the river and water environment. Two large funding were obtained in the area of innovative bio-energy production. Information dissemination and publications from the research activities are widely undertaken in this division and quite visible.

### Social Environmental Science Division

This division aimed at research and project activities towards sustainable society by realizing a low-carbon, environmental symbiosis society through domestic and international research collaboration concerning disaster prevention, environmental load reduction, and controlling greenhouse gases. Towards these goals, two large outside funding was obtained: JSPS AA-CORE project and JST-JICA sponsored SATREPS.

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More traditional research areas related to river engineering and mechanics sponsored by the Ministry of Land, Infrastructure and Transport are also noted indicating the division's expertise in the areas of disaster prevention and remediation of the water environment.

## OVERALL EVALUATION OF IEST

Within a short period of two years, IEST has accomplished remarkable research and academic activities. Because of the strong IEST activities in environmental sciences and engineering, Saitama University is being well recognized as one of the leading research universities among academia, scientific community as well as the funding agencies. Each IEST division was able to attract large outside funding with landmark research project. Some of the on-going research activities will have immediate impact on the post 3/11 disaster reconstruction effort as well as creating future low carbon, recycling society here and abroad. The research activities by IEST are relevant in fundamental as well as in applied field.

One concern that this reviewer had at the first advisory board meeting was the integration of manpower in three different IEST divisions knowing IEST was assembled from many different departments and staff of diverse scientific and academic backgrounds. By witnessing the collaborative research project formulation as well as success in obtaining impressive amount of outside research funding, this reviewer is pleased with IEST's impressive accomplishment.

Respectfully submitted,

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