

COE-INES Business Trip Report

Conference Name: MIT-Tokyo Tech Symposium on Innovative Nuclear Energy Systems

Attendee: 原子核工学専攻博士後期課程 2 年 Xingcheng DING

Date: November 1-6, 2005

Venue: Massachusetts Institute of Technology, Royal Sonesta Hotel, Cambridge, Massachusetts, USA.

Report of the symposium:

MIT-Tokyo Tech Symposium on Innovative Nuclear Energy Systems was held at Cambridge on November 2-4. This 3-days symposium was the first time to be jointly sponsored by the MIT Center for Advanced Nuclear Energy Systems (CANES) and the 21st Century COE Program: “Innovative Nuclear Energy Systems for Sustainable Development of the World (COE-INES)” in the Research Laboratory for Nuclear Reactors (RLNR), Tokyo institute of technology, two leaders in the development of advanced nuclear energy systems. About 100 people attended to this symposium, mostly of them were professors and students of CANES and RLNR, also including some company people and other agency people. The symposium aimed to exchange views on the direction of future nuclear reactor and fuel cycle technology, and allowed students at both MIT and Tokyo Tech to expand their professional contacts and cultural appreciation.

Technical sessions were focus on the following critical areas of interest to MIT and Tokyo Tech:

1. Supercritical-CO₂ power conversion cycle
2. Innovative fast reactor technologies
3. Poster presentations
4. Nuclear hydrogen
5. Actinide management and safety technologies



Photo 1. The main building of Massachusetts Institute of Technology

As a research student and future engineer in nuclear field, I think it is very important to hear the latest ideas and future trends of the nuclear science. In this symposium, I found that US professors have so much interesting facts about future energy and they already started to study how to keep and produce new and enough energy for long future. They already got many results about nuclear hydrogen and this was considered as most promising energy for future era. Therefore, I tried to understand more presentations about this knowledge. During the coffee break and dinner, I had this chance to talk with famous scientists and asked some questions which I had much interest and exchanged some opinions with several other students in MIT.

November 3rd was the day for technical tour. In the morning, we visited MIT campus and the tour gave us the whole impression of MIT. Photo.1 is the main building of MIT. I think the most

important things in this visit were MIT reactor and Alcator lecture. In MIT, they have one reactor which power is 5MW, so they can use this reactor to study so many topics about nuclear science conveniently. During the Alcator tour, we heard one lecture and learned some top end knowledge about plasma-the fourth state of matter. Although I was not familiar with plasma knowledge, but after this lecture, I had some interesting understanding of the outline of these phenomena.

Poster presentations were held at November 3rd during 1:00-3:00pm. Photo 2 is the picture of my poster presentation. My presentation is about new advanced nitride fuel and the main topic is how to get enriched nitrogen isotope:¹⁵N. Although my study technique uses chemical method to separate nitrogen isotope, some professors have strong interest about my study. They thought my study method is very interesting and has large difference with them. And we also discussed about the whole world future trends of my study, they thought Japan is stronger than US about this nitride fuel study. Thus these words give me much courage to continue study on my topic deeply.

We are much honoured that we were invited to attend one lecture by 2005 Nobel laureate Dr. Mohamad. ElBaradei, secretary general of the International Atomic Energy Agency (IAEA) and the title of his lecture is “Nuclear technology in a changing world: have we reached a turning point?” Photo 3 is the picture of Dr. M. ElBaradei when he made us his lecture. His lecture was so wonderful and he explained the whole future about nuclear technology and how to use nuclear energy. After his lecture, he answered many questions about the pop topic of the nuclear technology and application. I thought it was the rare case that I had this good chance to listen one lecture by the secretary general of IAEA, so I felt much honoured.

So all in all, I thought I got a great gain for my technical backgrounds and widened my viewpoint after this symposium. Also I understood some knowledge about my study in the position of the world. I thought this was very important symposium for me to attend this symposium, not only because of the most famous institute-MIT, but also the most famous professors that I met and learn some technical knowledge from their lecture. Additionally, I would like to express my sincere appreciation in being given this good opportunity and support to all of COE-INES staffs. This kind of opportunity is very important and necessary for cultivating excellent nuclear engineer in the future.

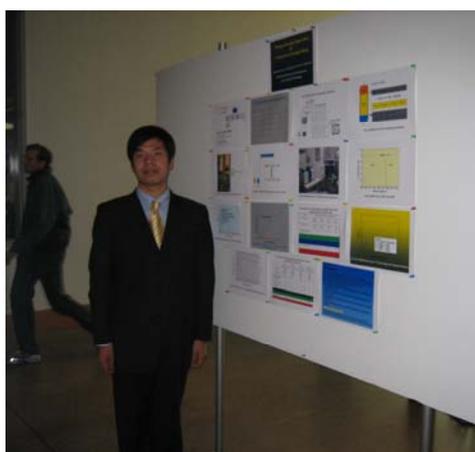


Photo 2. Author's poster presentation



Photo 3. Dr. M. ElBaradei's lecture in MIT