

## **Activity Report after visiting Malaysia**

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### **Foreword**

After the 7-day visit to Malaysia, we got away from the hot weather, cooled ourselves in the end of winter in Japan, reviewing and summarizing all the amazing experiences that would enrich my following study and life. Assuredly, owing to our clear objective before going, this short-term visit ended with fruitful results and even more than my expectation. With my purpose of learning the treatment method and its state of art for oil palm residue and experiencing multi-culture in Malaysia, the experiences and findings during this visit were summarized as below.

### **Findings**

#### 1. Laboratory visit

##### a. SHIZEN lab in MJIT

During the visit, I learnt about their research related on bioplastic production and subcritical water extraction from oil palm empty fruit bunches (EFB). According to a PhD student, in some palm oil industry, the oil palm biomass has been densified into briquettes using screw extrusion technology. The briquettes then can be used as solid fuel. But the high temperature and pressure also would break down the chemical structure of some useful nutrients in oil palm biomass, while subcritical water extraction can avoid this loss. Thus, they're finding the best condition to maximum the value-added products from oil palm biomass.

##### b. Biomass Technology Centre in UPM

The research contents in this lab almost cover all the treatment technology for producing renewable and valuable green bioproducts from biomass, such as composting, saccharification, biogas production, biodiesel production and carbonization process. They have both laboratories and pilot plants for these processes. The most impressive thing that I found in this research group is their efforts to develop an integrated zero-emission system.

##### c. Algal Research Lab in UM

Algal biotechnology also has been drawing many attentions recent years.

Malaysia, as a country owning abundant marine resources, has the potential to get benefits by the production from algae and seaweeds. This lab mainly focused on various valuable products, such as biofuel, bioethanol and biogas from different specimens of algae and seaweeds. Meanwhile, they are also trying to cultivate algae using palm oil mill effluent (POME) and use the algae/seaweeds residue for paper and pulp production.

### 【Summary】

We are very lucky that visited these excellent labs and learnt a lot in only several days. As the second largest producer and exporter of palm oil, huge amount of biomass generated from its plantation and milling activity has big potential to be converted to renewable fuel or value-added products in Malaysia. I even cannot image how large the million hectares of oil palm land is until I witnessed in the flight when we went to Kuala Lumpur. However, even though the various technologies for producing valuable products from oil palm biomass has been well studied on research level, few of them are applied in practice at present. Fortunately, the government of Malaysia has been encouraging the development of renewable energy from biomass and making large effort on attaining sustainable palm oil production. Likewise, precisely because of the encouragement and awareness of government, the research related on the utilization of biomass can be successfully proceeded to an excellent level.

## 2. Malay culture

Besides the academic communication, the experience on the unique feature of multi-culture in Malaysia also is an important topic during this short-term visit.

In the weekend, we went to one of the Malaysian oldest cities, Melaka and one of the most popular Hindu shrines outside India, Batu Caves. During Sunday, the students from MJIIT also guided us walk around Kuala Lumpur, visiting the Independent Square, city gallery of KL, central market and tasting delicious local dishes including Malay, Indian and Chinese. There are many mosques, temples and churches existed in KL and Melaka. The prayer rooms for Muslims also are in everywhere. And it is kind of surprise that many salesman in Malaysia also can speak a little Japanese.

In addition, even though I have little knowledge about the oversea company

in Malaysia, the visit to Asahi Company on the last day also was very rewarding. It is fortunate that I can understand some Japanese and I am grateful that one of our group members also explained some information for me. During the conference with Asahi Company, I learnt about the life styles of Malaysian and understood that even for the beverage industry, a lot of considerations were needed to make their marketing strategies adapting to the multi-religion in Malaysia.

### *Appendix*

Captions for following pictures (order: left to right, top to bottom):

1. Pilot plant in Biomass Technology Centre of UPM;
2. Bioreactor of algae in Algal Research Lab of UM;
3. Oil palm farmland near Sime Darby plantation;
4. “Crown shyness” phenomenon in FRIM;
5. Chinese restaurant;
6. Group photo in front of Batu Caves;
7. Christ church in Melaka;
8. The old KL railway station (KTM Berhad building)

