

Internship at Tohoku University

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Research title: Analyzing Coupled Radiation and Natural Convection problems

Supervisor: Prof. Shigenao Maruyama

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Scientific work

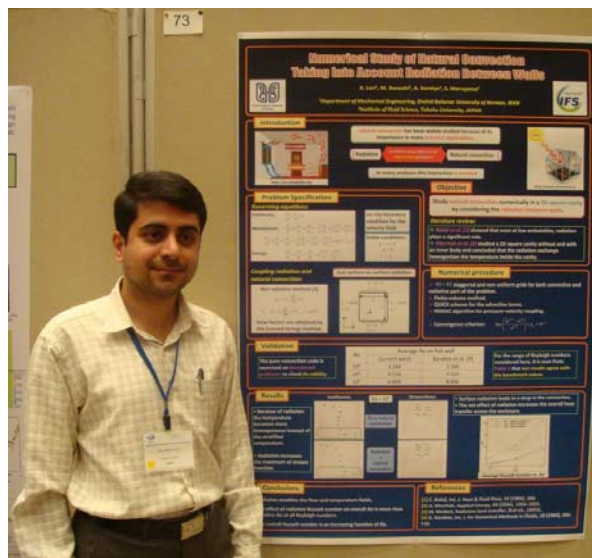
Under supervision of Prof. Maruyama, I studied numerically the interaction between radiation and natural convection heat transfer in a heated cavity. The aim of this work was to analyze the thermal and flow behaviors of the cavity with real case conditions under coupled radiation-natural convection heat transfer and to show the importance of radiation on such systems.

This analyzing comprised four situations in the cavity:

- 1- pure natural convection,
- 2- coupled radiation and natural convection in a transparent medium,
- 3- coupled radiation and natural convection in a medium with gray gases,
- 4- coupled radiation and natural convection in a medium with non-gray gases

The results showed that using the pure convection assumption for analyzing the cavities even with normal air mixtures at normal room conditions gives the results very far from the real case. Also, several interesting effects of radiation on cavity were observed.

With the results of these works, a conference paper for ICFD and two international journal papers could be obtained.



Trips and Fun

Japan is a special place with very kind, polite, honest and diligent peoples. On the golden week I could visit Kyoto, Osaka and Kobe. I visited many historical places such as temples, shrines and museums in these cities. Also, I visited some natural places like parks, rivers and seaports.

During summer, I went to Tokyo with some of my friends. We visited an amusement park at the Tokyo Dome City.

I also visited many places near Sendai and I had chance to see some festivals in Sendai. I took a lot of pictures and enjoyed a lot. I think these trips and festivals were great advantages of my stay in Japan.

Friendship

The best part of this internship was making friends with many wonderful peoples with a variety of nationalities. It was a good opportunity to meet many international students at Maruyama-Komiya Lab and Tohoku University. I became familiar with different cultures from different countries, specially, the Japanese culture. I wish these friendships continue and I hope we can cooperate in the future and maybe meet somewhere.



Summery

These internship programs are very good opportunity for all foreign students to improve their scientific knowledge and to exchange their experience with Japanese students. Also, from cultural viewpoint, both foreign and Japanese students can learn many things from each other.

I hope such programs continue in future and I wish I can visit Japan again.