

Experience Note of GCOE Internship

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At first, I want to thank "Global COE Program" and Prof. Takagi, they give me this opportunity to study and research in Institute of Fluid Science at Tohoku University. During the three months' internship period, Sendai and Japan give me deep impression and there are much great and worth remembering experience.

Part A: Research Activities

My research topic is "Electromagnetic quantitative nondestructive evaluation of plastic deformation in mechanical structures", I have focused on Barkhausen Noise and Incremental permeability methods previously. During the internship period at Prof. Takagi's lab, it continues this research topic, however, I have learnt several new methods such as Non-linear eddy current, Pulsed eddy current, Electromagnetic acoustic echo and electromagnetic acoustic resonance. The measurement results indicated that: (1) the BN method is very sensitive to carbon steel when the level of plastic strain is lower than 2%; (2) there is a close relationship between loop-area and coeivity of NECT signals and plastic deformation, it is a promising parameter to quantitative evaluate plastic strain in austenitic stainless steel; (3) the PECT method also is sensitive to both low-level (high-level) plastic strain in carbon steel and larger scale of austenitic stainless steel; (4) Based on the plastic deformation induce variation of acoustic transmit velocity, electromagnetic acoustic resonance (EMAR) method is sensitive to austenitic stainless steel, when plastic deformation is higher than 2%.

Besides the experiments, the discussions with Prof. Takagi, Prof. Uchimoto, Prof. Dobmann and PhD. Xie gave me great benefit, I acquired much good advice and suggestions from them. I also attended the conferences of ICFD, ICMST and MAGDA, it improved my abilities such as oral English and presentation.

Part B: Live in Sendai

After three months' living in Japan, Japan is a beautiful and well developed country in my impression. Sendai and Japan are very clean, convenience and safety, there are blue sky and white cloud everywhere, the street, parks and station keep clean and tidy all the time, all the rubbish are put into recycling bins very carefully. The rivers are lucid and maintains are covered with green trees. The Japanese people are polite, responsibility and self-discipline. You could see the smile face and hear polite regarding everywhere, there is no noise on the bus and markets, it always could find

book stores in every street. The staffs are highly responsible to their works, most people are self-discipline that the society is well-ordered.

Finally, I'd like to express my heartfelt thanks to Prof. Takagi and all the staffs in Prof. Takagi's lab and GCOE office, I really appreciate their kind helps and consideration. I have enlarged my research view, accumulated research experience and make friends with many excellent students through the GCOE internship.

