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Host: Professor Akira Mizuno

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JSPS Fellowship and Period: Short Term Postdoctoral Fellowship, August to October 2011

Non-thermal Plasma Applications for Liquid Waste

I was very fortunate to be awarded a JSPS postdoctoral fellowship that gave me the beneficial opportunity to visit Japan and conduct a very interesting research project in collaboration with Professor Akira Mizuno, a very famous professor for his accomplishments in applied electrostatics and non-thermal plasma technology in environmental applications.

Non-thermal plasma technology has recently become significant for environmental applications such as gaseous pollution control, solid and liquid waste treatment, due to the advantages such as lower costs, higher treatment, energy efficiencies and smaller space volume. As a part of my postgraduate research project in Plasma Chemistry at the University of Manchester, on “*Non-Thermal Plasma Methods for the Clean-up of Waste oils and Solvents*” this joint research project gave me the opportunity to expand my work and create significant linkages with Mizuno and Takashima laboratory of Applied Electrostatics in Toyohashi University of Technology investigating a new method of non-thermal plasma technology application in liquid waste. Significant observations have been made in which the outcomes will enhance the knowledge of the non-thermal plasma technology interaction with liquids and it will be an on-going collaboration between the Plasma Chemistry group of The University of Manchester and the Applied Electrostatics laboratory of Toyohashi University of Technology.

Working in “The Applied Electrostatics Laboratory” of Professor Akira Mizuno and Associate Professor Kazunori Takashima at the Toyohashi University of Technology has been proven an excellent personal experience. Academics and students were all very friendly and I gained a lot by discussing and exchanging ideas about different non-thermal plasma applications, but also having a good time outside work. They made me feel sure that I will encounter no problem during my stay in Japan, and there was a lot of organisation in advance, including my accommodation which was all arranged from Prof. Mizuno. Toyohashi in Aichi prefecture is rather a quiet city, but yet the local area has enough to discover including the excellent local sake! Also travelling around Toyohashi is very easy by *shinkansen*, and it is both near to Tokyo, but also Kyoto, Nara and Osaka. During my stay in Japan, I was also able to attend the Annual meeting of the Institute of Electrostatics Japan in the Tokyo University of Science, where I was awarded with an “excellent presentation

award”. It was a great opportunity to communicate my research in Manchester, yet at the same time gain a lot of information of related research in Japan and meet some very important academic personalities.

Two months in Japan was enough time to be amazed from the beauty of this country and get a good flavour of the Japanese culture to make you feel that you want to visit again soon. I found my period of stay was ideal. I was able to discover a bit of the Japanese summer and experience the marvellous summer festivals wearing *yukata* and watching the amazing handmade fireworks. But yet, I was fortunate enough to live the divine transition to autumn beauty, with the dark sky, the deep green and warm red colour on the trees, a magical blend of nature that gave me nothing else but peace.

I would strongly advice people to apply for the JSPS programs as it is going to be proved a once in lifetime experience. I know the idea of staying in a country so far with so different culture and languages barrier could be scary, but those are sweet challenges and the continuous JSPS support with the great Japanese hospitality will make your stay prosperous and enjoyable. I had a memorable time and unique experience in Japan and I want to personally deeply thank JSPS for the honour and opportunity, and also Professor Mizuno and the rest members of the Applied Electrostatics Laboratory, Toyohashi University of Technology, for their collaboration, support and great hospitality.

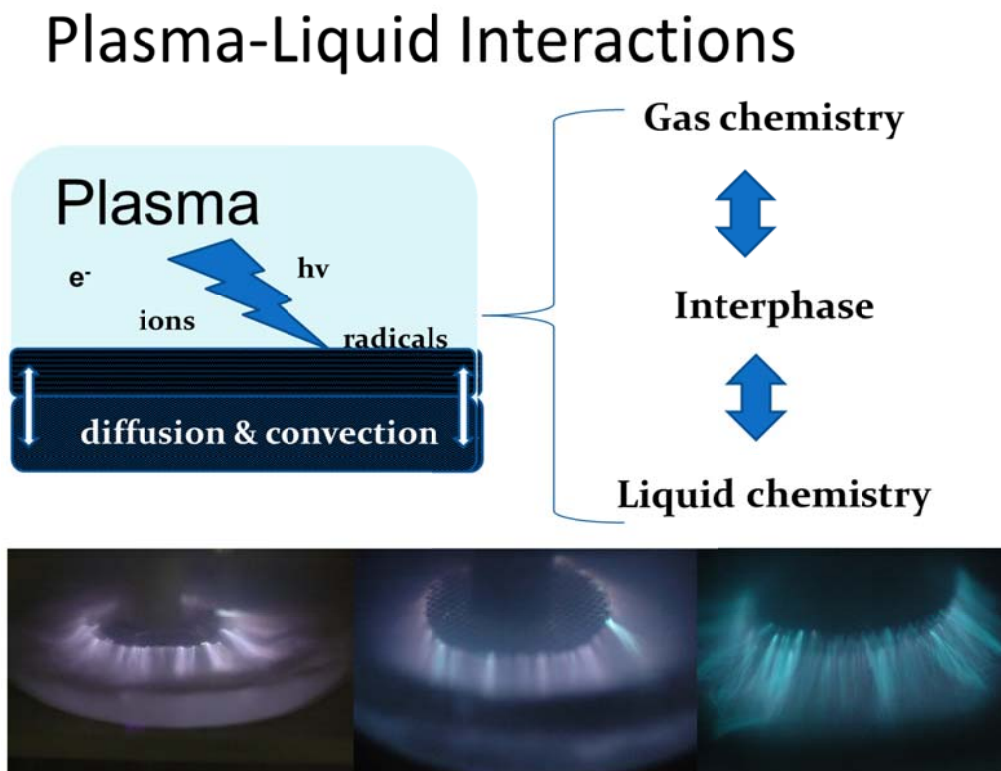


Figure 1 Above: Schematic of plasma liquid interactions Below: Argon Dielectric Barrier Discharge treatment of oil film, dry and humid (with humidity increasing to the right)



Figure 2 On the left: Presenting my work from University of Manchester to the annual meeting of Institute of Electrostatics Japan (IESJ) in University of Science, Tokyo, Sept 2011

Figure 3 On the right: Holding my “Excellent Presentation Award” at the IESJ meeting next to my Host Professor, Akira Mizuno



Figure 4,5 A trip to beautiful Izu Peninsula, together with other members and guests of the Mizuno and Takashima laboratory