



## **JSPS (Japan Society for the Promotion of Science)**

**Invitation Fellowship – Jun Peng (S16058)**

**Host Institution: University of the Ryukyus, Faculty of Engineering**

**Host: Prof Minoru Yaga**

**Collaboration Project: Investigation into Mixing Enhancement of Jets with High Speed Flow**

During one month's visit, I mainly participated into Prof Yaga's research projects including experimental studies of effects of throat height and disturbances on transonic flow and Interaction between shock wave and vortex induced by a small volume high pressure shock tube. By directly working with Prof Yaga and his research students for experimental work, result processing and relevant discussions, we learned a lot from each other to enhance our understanding of those topics and for optimizing our investigations in those areas. In Prof Yaga's lab, some improvements on test system and result analysis have been suggested by those collaborations. Based on joint work which included my contribution mainly focused on CFD simulation, some new findings have been produced and a joint publication will be prepared.

In University of the Ryukyus, I have also observed other research projects in the Faculty, such as research on engine combustion and emission control, renewable energy application for seawater desalination for producing fresh water, etc. While some of those have been recognised as being top level research in the world, I have provided relevant information to my colleagues at the University of Hertfordshire and hopefully further collaboration can be established between our two universities.

During my stay, Prof Yaga also helped me arrange a visit to Hitachi Zosen (Maritime) Company, in particular their factory for diesel engine and SCR system productions in Kumamoto. By some deep discussions took place with Hitachi Zosen experts about possible collaborations between Hitachi Zosen and Prof Yaga and me for optimizing mixing in the SCR system and for diesel fuel injection. Another visit I made was to the Okinawa College of Technology, which is a national college located in Okinawa and has some similar research on renewable energy etc. At the Okinawa College of Technology, we have also explored possible collaborations on teaching, staff exchange and relevant research.

In University of the Ryukyus and Hitachi Zosen, I delivered three seminars to introduce my research and my possible contributions to relevant collaborations.



Working in the lab at the University of the Ryukyus



Visit to the Hitachi Zosen Company