



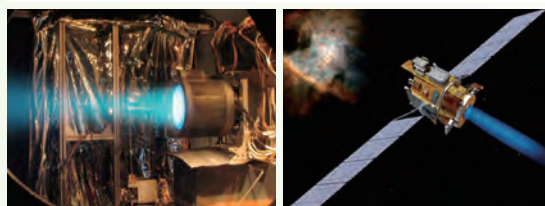
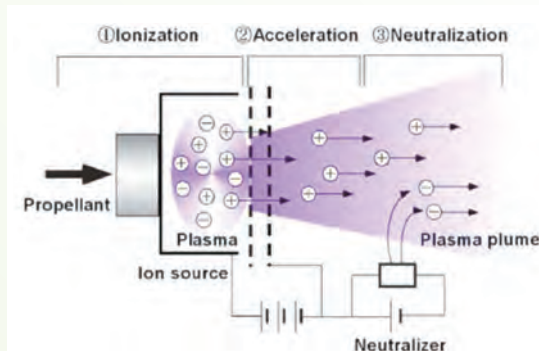
Ali Yousefian

総合理工学府
環境エネルギー工学
一貫制博士1年(修士1年)

The majority of my time is consumed by my academic life on campus. My research field is advanced space propulsion which focuses on development of electric propulsion engines for spacecrafts. The demand for mN class miniature propulsion systems is expected to grow in the future. Miniature microwave discharge ion engines are candidates for use as miniature propulsion systems, since an ion engine produces high thrust efficiency with a specific impulse of 3,000-8,000 sec.

1. Miniature ion engine can be used for
2. primary propulsion of Mars exploration
3. Self-disposal of satellites whose missions have been completed will also be possible, eliminating destruction or retrieval costs
4. Precise high-stability attitude and position control in large spacecraft

We have been studying physics inside the miniature ion engine using laser diagnostics as well as numerical simulation code. In addition, we have been developing real time lifetime evaluation system using Cavity Ringdown Spectroscopy(CRDS). In summary my research theme involves numerical simulation of particles inside the thrust chamber of an Ion thruster with the goal of developing a more accurate and comprehensive simulation of charged and neutral particles behavior inside an Ion engine. By achieving an accurate simulation we can develop faster and more efficient spacecraft engine which would lead to more efficient space missions. Moreover, the Green Asia course has offered me the opportunity to take courses outside of my field as well in order to expand my knowledge. Courses such as Aquatic Chemistry, Organic photovoltaic, Solar Energy etc.



Rezwan Ahmed

総合理工学府
物質理工学
一貫制博士1年(修士1年)

It has been almost a year since I set my foot in this 'Land of the Rising Sun'. Since then I have indulged myself in several activities and all were very exciting and amazing. I have successfully completed a good stride in my major research which is concerned with surface phase determination of Pb and Bi co-adsorbed on Cu(100). For the past three months I have been attending a different laboratory as part of the Green Asia (GA) curriculum of 'Lab Rotation'. I am doing my 'Lab Rotation' under the supervision of Yoshitake Sensei in his laboratory. My research over there is quite interesting and includes

new research topic in the field of Spintronics. Spintronics is the area concerning the utilization of two freedoms of an electron, which is charge and spin. In spintronic devices the manipulation of angular momentum of electron spin together with the charge plays an important role towards development of new concept in electronics and photonics. My research is devoted towards finding the fundamental phenomenon of Giant Magnetoresistance (GMR) involving Ferromagnetic Fe3Si and a spacer layer of ultra-nano crystalline diamond (UNCD). The result so far is quite exciting and we hope that our research group can contribute further towards the progress of this research. During my association with the lab where I am doing my 'Lab Rotation', I also had the opportunity to work and attend the 'APAC silicide' conference which was held in July in Fukuoka. As this lab was the host of the conference in this year so we were involved in many activities and this actually broadened my knowledge not only on the subject concerned but also on how to organize and coordinate during a conference. Beside these academic activities I also had the opportunity to roam around this beautiful place. Among them I particularly enjoyed the visit to Nagasaki peace memorial museum and also went to many sea beaches to soothe myself with the wonderful environment. In the coming months I hope to associate myself in more activities of the GA curriculum. I will be joining my second 'Lab Rotation' and also the 'Domestic internship'. In short, I must say that the GA program is a full of dynamic package, it has all the necessary ingredients to build you up and face the global challenge of this century.

