

## JSPS Short-term Invitation Fellowship

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**Host:** Prof. Hisanori Shinohara  
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**Period:** 2<sup>nd</sup> April to 30<sup>th</sup> May 2016

The JSPS short-term Fellowship allowed me to travel to Japan for research discussions and initiate research collaboration with Prof. Shinohara and his group at Nagoya University but also to travel to 9 other institutions within Japan for scientific discussions (Institute for Molecular Science Okazaki, Okoyama Univ., Kyushu Univ., AIST Tsukuba, Kyoto-Sangyo Univ., Kyoto University, Shinshu Univ., Tohoku Univ. and Tokyo Univ.). I gave 9 research seminars, participated in a 1-day research symposium on “Toward bottom-Up Approach to Nanotechnology Era” at Tohoku University and participated in 1:1 research discussions with graduate students at Nagoya University, Tohoku University and Kyushu University.

At Nagoya University, in addition to the Shinohara group, I interacted with the Hishigawa-group (to discuss potential collaboration in the field of fs laser spectroscopy of fullerenes and small molecules), Prof. Awaga (plans to organize a Faraday Discussion conference, discussions concerning University of Edinburgh exchange students and the initiation of the joint PhD degree programme between Nagoya University and Edinburgh University) and Prof. Irle (fullerene growth and fragmentation and the IWP-ITbM). My husband, Mats Jonson, an emeritus professor of theoretical condensed matter physics at the University of Gothenburg in Sweden and former member of the Nobel committee for physics, was able to join me and together we visited four condensed matter physics groups at Nagoya University (Profs. Terasaki, Itoh, Wada, Sato), Prof. Bauer (Spintronics, Tohoku Univ.), Prof. Takahashi (cold atoms, Kyoto Univ.) and Prof. Kimura (spintronics, Kyushu Univ.). He also held research seminars at Nagoya Univ., Kyushu Univ., AIST, Shinshu Univ. and Tohoku Univ.

At Nagoya University I collaborated with members of the Shinohara group (Dr. Kitaura, M. Okada) on growing and transferring monolayer and few-layer samples of TMDC. Concrete plans for a research collaboration have been developed that will use the blister-based laser-induced forward transfer technique, being developed in Edinburgh, to develop a dry transfer technique for such 2-dimensional materials. This would enable clean heterostructures to be prepared and their electronic and optical properties to be studied. It may also provide a convenient means for transferring the materials to flexible substrates for piezoelectric applications. The transfer technique will be tested on Nagoya samples on my return to Edinburgh and, if promising, a grant application will be submitted and plans drawn up to transfer graduate students working on this topic.

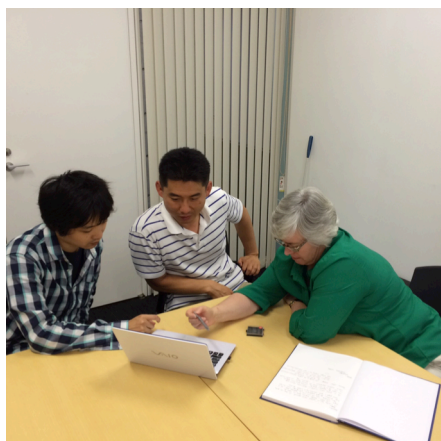
In addition, collaboration plans have been discussed with Prof. Hishigawa (Nagoya), Prof. Kawakita (Kyoto-Sangyo Univ.: probing the distribution and understanding the consequences of  $C_{60}^+$  in space), Prof. Endo (Shinshu Univ.- porous N-doped carbon materials for carbon capture applications) and collaboration with research groups

involved with the “Creation of Endohedral Fullerenes Nano Biotronics”  
Interdisciplinary Research Program of Tohoku University.

We were mainly based at the University of Nagoya and had a very convenient and excellent quality apartment, within the Noyori conference centre on campus, for the duration of the stay. I was also allocated a well-equipped and modern research office within the Research Center for Materials Science. My host and his secretary took care of all the organization associated with my travel schedule, booking train tickets etc. It was a great pleasure to travel on the Shinkansen in Japan and very easy to use public transport. We received some wonderful hospitality from the groups that we visited and were treated to a wide range of delicious Japanese food. April and May are ideal months to visit Japan. We arrived just in time for the cherry blossom and greatly enjoyed sight-seeing activities at the weekends.



With the Shinohara group, Nagoya Univ.



Discussions with  
M. Okada and R. Kitaura



Breakfast at a ryokan