

My stay at the Institute for Molecular Science



Olga Drozdova

It is time to summarize my yearlong stay in the Institute for Molecular Science, which has been both pleasant and fruitful. I am deeply indebted to Prof. K. Yakushi for inviting me to join his laboratory and also to his group members for their warm hospitality and kindness. This visit was a natural extension of my work in Kyoto University in the laboratory of Prof. G. Saito (1998–2000), during which I visited Prof. Yakushi's group a number of times for experiments.

The first project was comparative study of the infrared and Raman properties of κ - and κ' -(ET)₂Cu₂(CN)₃. We discovered an oriented homogeneous mixture of two kinds of ligands in the superconducting (κ' -) compound, estimated the mixing ratio, and examined the correlation between the properties of superconducting state and composition. Second project was motivated by the absence of a reliable tool for estimating the charge transfer degree of BEDO-TTF complexes. We employed Raman spectroscopy and found a linear correlation between two C=C stretching modes and charge on BEDO-TTF in the region between 0 and +2. It was applied to dozens of complexes where other methods were not applicable or not reliable, and allowed us to estimate the critical charge value $p = +0.3$, above which BEDO-TTF tends to self-assemble into a two-dimensional layer with extremely small anisotropy, and to provide metallic and highly conducting complexes. The main interest of the passing year was spectroscopic study of organic metals, for example, calculation of the electronic band structure and Fermi surface of (EO-

TTP)₂AsF₆ from the infrared spectra, and understanding optical properties of a strongly correlated organic metal κ -(ET)₂Cu(CN)[N(CN)₂] in the far-infrared region where the intraband transition of the free charge carriers appears.

In summary, the high level of fundamental scientific research, excellent facilities, close scientific interaction and international atmosphere of IMS benefit both the Institute and foreign visitors and allow to obtain exciting results and generate new ideas for future development.

My impressions of the IMS

Sam D. Moré

Two years ago I arrived in Okazaki to study NEA formation on GaAs, to learn a new technique (photoemission spectroscopy) and last not least to experience life and work in Japan. Previously I had been for short scientific stays in both Huntsville/Al and Bercely. Studying first in Hamburg and later in Berlin both at the Free University and the Fritz-Haber Institute, which might be comparable in equipment and funding with the IMS, I had therefore spent most of my scientific life in large cities. Now I was exchanging Berlin with a place that had less than 1/10 of inhabitants. I was curious how this would shape my stay and how this would characterize the IMS and distinguish it from other institutes I have worked before.

At least for me as a foreigner the most important feature was the international campus-like community I found around the IMS and the neighboring institutes—the unique mix of long-time scientists, who stay typically for more than one year, the visiting scientists who will be here only for a few weeks or months and finally the ones who only come for a few days to give a lecture. Also Japanese scientists tend to stay for long hours at the institute. In a sum this creates a thriving interdisciplinary scientific community which I experienced as an especially stimulating atmosphere.

Additionally to both formal and informal meetings or conferences, I enjoyed many evenings with neighbors from all over the world, be they from Sweden, the US, Korea, Vietnam or China, to name just a few.

In my experience information is freely shared between research groups. Something special in that context was also the former interdisciplinary “Beer seminar with pizza and sushi” that used to take place in the rooms above the cafeteria until the organizing scientist left for a position in the US.

The number of people on a particular group defines both social climate and group hierarchies more than other any other factor.

As Okazaki is a small town, ethnic communities do not form that exclusively—creating a unique community of foreigners which is—when I compare it to the ones I heard about Tokyo, Nagoya or Osaka and experienced in San Francisco or Berlin—more open and which truly enabled me to get more than a glimpse from other cultures.

I have also found the Japanese population of Okazaki very friendly and helpful, and this includes both the IMS administration and the one from city hall. I have rarely encountered a more efficiently organized bureaucracy as well. Therefore one of my first impressions was the astonishment that on the day I arrived in Japan everything from housing to my JSPS settling in allowance to the kindergarten place for my daughter was ready and waiting for me.

In fact the family friendly attitude I found in Japan and at the IMS, has definitely contributed to the success of my research at the IMS.

Here I have in particular also to thank my host, Prof.



M. Kamada, and the other members of both his group and the UVSOR department with which I have worked for the past two years.

What I found important as long-time foreign scientist and what might be also a good idea for other visitors was to learn some Japanese. I found that knowing some Japanese also facilitated communication in English: hearing my mistakes in Japanese probably made people feel less selfconscious about foreign languages. A good option might actually be to learn Japanese in advance or exclusively during the first months. In spite of the language barriers, connecting with people outside the institute is fairly easy as Okazaki offers the various activities of the OIA, a choir, and a large variety of sports-clubs.

Situated between the sand beaches of the warm pacific ocean and the mountains of central Japan, and with an almost subtropical climate the founders of the IMS therefore definitely picked a good site to build.

All this has made me feel so much at home that I decided to continue my stay as an IMS fellow in the group of Prof. T. Urisu, now starting a new exciting project, whose aim is to combine biological material with nanostructures.