

From BESSY to PF: Impressions from a user of synchrotron light sources in Germany and Japan

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During and after my PhD studies, which I finished 1986 at the Fritz-Haber-Institute in West Berlin I had the opportunity to work at the synchrotron facility in Berlin (BESSY). The available photon energies at BESSY range from IR light to soft X-ray. The largest group of users came at this time like me from the photoelectron spectroscopy mainly investigating surface and interface properties of metals and/or semiconductors. Since 1987 I am in Japan, starting as a JSPS (Japan Society of the Promotion of Science) and AvH (Alexander-von-Humboldt) foundation fellow at the Institute for Solid State Physics (ISSP, Prof. Yoshitada Murata) in Tokyo. I am now as post-doctoral fellow with NTT for one year in the Synchrotron Radiation Analysis Research Group (Dr. Masaharu Oshima) of Applied Electronics Laboratories. In this 3 1/2 years I had several beamtimes at the Photon Factory in Tsukuba at BL-1A of NTT, studying semiconductor interfaces.

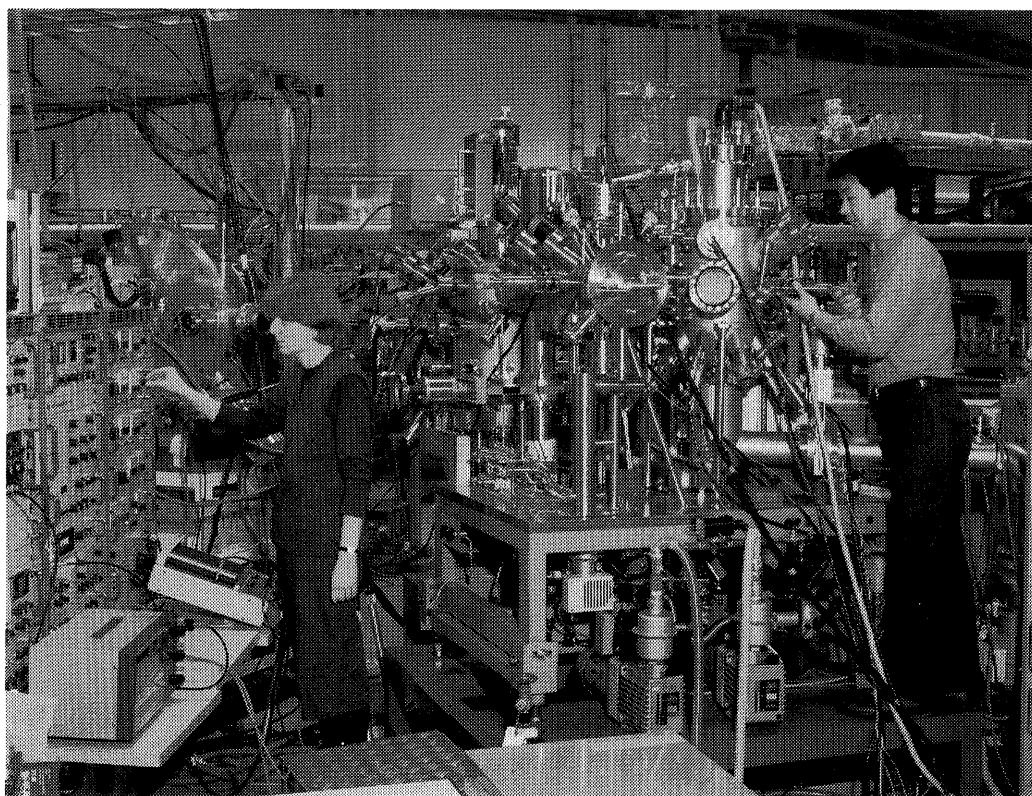
When I came the first time to the PF, after working at BESSY and at least just arrived from Tokyo my spontaneous impression was "space!". Indeed the Photon Factory is really planned in a large scale. All apparatus and equipment look quite new, with the highest technical standard. A third point which foreigners usually feel very excellent is the organization, how the staff carry on the PF and how they interact with the users. This is indeed not so surprising, if we take in consideration the long tradition of constructing and operating synchrotron facilities in Japan with now the highest density of such sources in the world. They are really professionals!

Of course the research at the PF is in some sense different from the research at BESSY. From the design of the PF the experiments are more concentrated on structure analysis by x-ray diffraction, with a lot of research groups in biochemistry. A very new fact for me was the strong contribution of companies in the PF. 4 companies have their own beamlines and a lot of other companies have various experiments at PF beamlines. In Germany traditionally basic research and what I call applied basic research is done by the universities or the more independent institutes like Max-Planck Institute or Fraunhofer Institute. Of course collaboration projects between companies and institutes are existing also at BESSY concerning lithography etc., however the interest of german companies in research at synchrotron facilities is rather low in comparison to Japan and at least they have no own beamlines. When I attended last March the SPring 8 meeting in Kobe I was rather surprised to see the large number of participants from Japanese companies.

Synchrotron radiation facilities have naturally two kinds of investigations, one is in the field of technology (such as beamline construction etc.) and the other is in the field of science. The PF has for these purposes the optimal combination of users; scientist from universities, institutes, companies and PF staff working in a large range of research fields. I think in this sense a synchrotron is more than a service facility, it can (should?) be a center of intellectual exchange and a transfer of experiences. It is important to have a balance between technical input (facilities etc.) and intellectual output (scientific understanding, papers etc.). The PF activities seem for me more concentrated on the input side. At BESSY I found a very active discussion among the scientist about their experiments. One reason for this was because of the smaller number of users, which gave a more intimate atmosphere. On the other hand, BESSY is located in Berlin city, which incorporates the beamtime more in the daily work and life.

It would be good to have more informal discussions and exchange of ideas among the users and staff besides the annual symposium also at the Photon Factory. I know from my own experiences very well that beamtime is always too short; during beamtime one is usually too busy (or too tired!) for discussions and after beamtime one is very eager to return home. Tsukuba is a kind of an artificial city, where the atmosphere is cold and not very stimulating for this purpose. The designer of this science city completely misunderstood, that doing science means not only to have the functionality of research institutes.

Another problem often discussed in Japan is the "international exchange". Of course Europe is a



Working at the surface analysis chamber of BL-1A together with Mr. Hirohiko Sugahara from NTT.

mixture of a lot of very small countries, so it is very easy to have like 1986 at BESSY 60 researchers of 20 different countries participating in the beamtime (24 from non-European countries). However, if there would be more information in Europe about possible collaborations for beamtime at the PF, I could imagine that the number of foreigners would be increasing. One reason why I enjoy working at synchrotron sources is the international atmosphere, which is for me always a source of intellectual inspiration.

At last a very personal comment. I am very happy to see recently an increase in female scientists at the PF and I hope this tendency will continue in future. The small number of female scientists in relative low positions is not only typical for the Photon Factory, but it reflects the strong separation in Japan between the "world of women" and the "world of men". I had the impression, that Japanese male scientists are usually not accustomed to work with women and because of this ignorance they might feel some scrupels (or fear?). At BESSY a lot more female scientists enjoy working at the beamlines, among them some have leading positions in beamline construction and operating.

Last but not least I would like to express my deep gratitude to Prof. Chikawa and the staff of the Photon Factory for their hospitality, especially I would like to thank Prof. Iwasaki, Prof. Miyahara and Prof. Kato, who took care of me during my work at BL-1A.