

The Polish Synchrotron Radiation Society from the perspective of thirty years as seen by the President

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On Thursday afternoon in 1991, I met Dr. Marta Zimnal-Starnawska at the Institute of Physics of the Jagiellonian University at Reymont Street in Krakow. We knew each other from my physics studies at UJ and then we became friends at Brookhaven National Laboratory (BNL) in the USA in 1985. Marta told me about the initiative of prof. Andrzej Kisiel and prof. Julian Auleytner from the Institute of Physics of the Polish Academy of Sciences in Warsaw on the organization of the National Symposium of Users of Synchrotron Radiation. The organizers wanted to recognize the interest of a scientific community in research conducted with the use of synchrotron sources. Due to limited access to these sources in Poland, the number of researchers was low. Mainly research was carried out with the use of laboratory sources,

but it was known that the use of synchrotron radiation sources would significantly improve the research possibilities and the obtained results.

The symposium was held on February 11 and 12, 1991 at the Guest House of the Jagiellonian University in Przegorzały (currently there is the Forest Hotel). During this meeting, it was suggested that a scientific society should be established in Poland, gathering all enthusiasts of synchrotron radiation in its ranks. I was the lucky guy who had the opportunity to build the X26 beamline at BNL and perform there experiments for my doctoral dissertation, which I defended in October 1989. It was the fruit of a three-year stay at BNL. There is no need to convince anyone that the adventure with synchrotron radiation which started in 1984 had a huge impact on my scientific plans resulting from my fascination and the possibility of learning about the surrounding world, which was provided by methods using this radiation. Undoubtedly, the group of prof. Kisiel in Krakow and prof. Auleytner in Warsaw were the leaders that conducted research on synchrotrons. Those research groups were small, but their enthusiasm and fascination gave them the strength to act. I was not a member of these teams, but an outsider from Bronowice. Thanks to Marta, I got to know prof. Kisiel and his team.

The group of prof. Auleytner from Warsaw, quite a large group of Cracovians and individuals from various centers in Poland came to Symposium in Przegorzały. Prof. Kisiel and prof. Auleytner presented arguments for establishing a scientific society, the aim of which would be to popularize research with the use of synchrotrons and the organization of scientific schools during which we would learn what synchrotron radiation is, how the synchrotron works, what research and where could be carried out with the use of synchrotron radiation. Everyone agreed that such an initiative is very important for the scientific community. Society gave us a chance to establish contacts between us here in Poland and to establish international cooperation. It allowed us to significantly expand the research offer of our teams. During this meeting, we discussed the organizational and legal aspects of our activity. We established a team whose task was to write the statute, prepare a registration application to the court, and appointed a temporary Management Board. The Management Board was headed by prof. Andrzej Kisiel and prof. Julian Auleytner became the Vice-Chairman. We have also established that the seat of the Society is Krakow and the scope of activities covers the entire country. We signed the declaration of joining the Society and the attendance list at this meeting in one of the small rooms on the ground floor next to our meeting room. The declaration of joining the Society was signed by 29 participants of the meeting – Izabela Sosnowska, Julian Auleytner, Henryk Fiedorowicz, Tadeusz Pisarczyk, Józef Oleszkiewicz, Ewa Czarnecka-Such, Marta Zimnal-Starnawska, Andrzej Rodzik, Andrzej Andrejczuk, Marian Surowiec, Grzegorz Kowalski, Krystyna Jabłońska, Jadwiga Bąk-Misiuk, Eugeniusz Rokita, Wojciech Kwiatek, Paweł Tomaszewski, Helena Grigoriew, Maria Lefeld-Sosnowska, Jerzy Pielaszek, Krzysztof Reubenbauer, Janusz Waliszewski, Dorota Dębowska, Marek Stankiewicz, Jacek Goniakowski, Roman Markowski, Henryk Kępa, Andrzej Kisiel, Ewa Sobczak, Jacek Grochowski. We were all very excited, we were aware that we were starting new pages in the history of the development of Polish physics. It was late but we were full of energy to act and with the hope that we would be able to meet our expectations. That night we finished the session as members of the Society - although it was still required to register the Society in the Court. Then, during the symposium in Przegorzały, we established that it was the first National Symposium of Synchrotron Radiation Users and that the next one will be held in two years.

The following days were devoted to the preparation of documents. Waiting for the registration seemed to be endless. Until the day when the letter from the Court arrived, now we were able to act as a fully-fledged Society. The first treasurer was Marta, who knew that I had some financial experience from the scouting times. Therefore she asked me to take over these duties during the first General Assembly. We had to organize such a meeting as the official Society. And so I became the treasurer, as it turned out many years later.

The main tasks of the Society were also the organization of an international school and a symposium. We called it "International School and Symposium on Synchrotron Radiation in Natural Science" - ISSSRNS and decided to organize it every two years, alternating with the National Symposium on Synchrotron Radiation Users - KSUPS. Over time, the abbreviation ISSSRNS was replaced with the shorter abbreviation ISSRNS.

The first International School (ISSSRNS) was held on May 13-21, 1992 in Jaszowiec. The chairmen became prof. Andrzej Kisiel and prof. Julian Auleytner. Many wonderful lecturers from major synchrotron centers were invited as well as guests, among them were: M.J. Cooper, P. Fratzl, R. Haensel, J. Hormes, A. Kvick, C. Malgrange, G. Margaritondo, G. Materlik, S. Mobilio, I.H. Munro, C.R. Natoli, P.-O. Nilsson, G. Rapp, R. Rosei, L. Schlapbach, G. Vogl, E. Weckert, T. Wróblewski, *et al.* and it was they who took us on a journey through the secrets of synchrotron radiation.

Thanks to the founding of the Society, we had the opportunity to get to know each other better and to teach each other about the research possibilities offered by synchrotrons. During joint meetings, conferences, and schools, not only scientific but also social relations between us strengthened. Sometimes our family members also took part in the conferences. And it is so today. The accompanying children have always given us a lot of fun. And this is when organizing a highlander dance show on a large barrel standing next to the fire, or suddenly appearing in the conference room, relieving the chairmen and announcing another lecture - "Now, my Daddy will have a talk". At that time, there was a surprise, a pleasant surprise, and a smile on the face of prof. Bronek Orłowski, because he was the perpetrator of such actions. Common walks and evenings by the fire were an opportunity not only for talks but also for dancing and singing to the accompaniment of the sounds of the prof. Czesław Kapusta's guitar. Czesiu even wrote a song about us. We can safely say that we managed to create a "family" of friends, and sympathizers of synchrotron radiation.

The tradition of organizing these national and international meetings is preserved to this day. For thirty years, we are still craving new knowledge about synchrotrons and research opportunities. Not so long ago, the third-generation synchrotrons seemed to be something wonderful, which would allow for a change in the quality of the research conducted. Today we know that the fourth generation synchrotrons – free-electron lasers have significantly changed the quality of research. We can observe the kinetics and dynamics of chemical reactions, phenomena occurring in less than a picosecond, or study the structures of individual atoms.

The activities of the Society are not only conferences or schools. Appetite increases with eating. Fascinated by the possibilities of research with the use of synchrotron radiation, we wanted even more. A wonderful center has been established in Grenoble - the European Synchrotron Radiation Facility. An initiative of a consortium of which Poland was not a member. Anyone can apply for an allocation of beam time, but scientists from member countries may have more of that time, as their countries bear the costs of the activity. Therefore, among the members of the Society, the idea arose that Poland should join this consortium with at least a minimal contribution. Talks with the ministry were conducted for several years. Prof. Kisiel traveled to Warsaw many times to convince ministerial authorities of the need for such an undertaking. Many members of the Society became involved in these activities.

As the Society's Treasury, I had very frequent contact with prof. Kisiel and one day he asked me to go to Grenoble with dr. Jacek Grochowski and take part in the ESRF User's Meeting and meet with the administrative director of the ESRF to initially discuss the possibility of Poland joining the Consortium. It was a huge challenge for me. I remember sitting with Jacek in the cafeteria and discussing the strategy of the conversation. We were asking ourselves questions so as not to forget anything. We were such a for-post on this matter. Later, the initiative was taken over by the Warsaw center. Prof. Krystyna Jabłońska has great merits in this field. It is difficult to count the hours, days, and months that prof. Kisiel and prof.

Jabłońska spent to achieve this goal. And after many years of effort, it worked out. Today, Poland pays a contribution to the ESRF in the amount of 1% of the budget and we can sit on both the Consortium Council and the Administrative and Economic Panel. We have easier access to the beam.

Another important initiative before Poland joined the ESRF was an attempt to build a consortium consisting of Central European countries (Austria, the Czech Republic, Slovakia, Hungary, and Poland), which would contribute 1%. The meeting of representatives of the scientific community of these countries was held in Krakow on the initiative of prof. Kisiel at the Collegium Novum of the Jagiellonian University. We had several meetings, but unfortunately, it was not possible to build this consortium. On the other hand, the Czech Republic, Slovakia, and Hungary signed the "Centralsync" consecration agreement in 2008, becoming an associate member of the ESRF with a 1.05% contribution. On the other hand, Poland, thanks to the efforts of the Society, became an independent associate member of the ESRF with a 1% contribution, and the role of the coordinator of the project to support Polish scientists in the ESRF is performed by the Institute of Physics of the Polish Academy of Sciences in Warsaw, previously represented by prof. Krystyna Jabłońska and currently by dr. hab. Anna Wolska.

Access to the ESRF did not exhaust the appetites of the Society's members. In parallel with the efforts made to obtain Poland's participation in the ESRF, the idea of building a National Synchrotron Radiation Center was born. Initially, there was also an idea to build a synchrotron in Central Europe, which would ease the burden of requests for beam time on European synchrotrons. The talks were held jointly with representatives of the Czech Republic and Slovakia. But where to get this huge amount of money from? Were the proposals different, from structural funds, funding for science, directly from European funds? Again a few years of deliberation. Years passed, and the Presidents of the Society changed (prof. Andrzej Kisiel, prof. Bronisław Orłowski, prof. Krystyna Jabłońska, prof. Maciej Kozak), but the dreams were always the same. However, the Polish community has undertaken intensified efforts to discern whether it is possible to build a synchrotron in Poland. The first discussions among the Society took place during the ISSRNS Conference in Jaszowiec, then in Zakopane, Szklarska Poręba, and Krakow. Work has begun on the design of the source, electron energy in the storage ring, and experimental lines. In Poland a Synchrotron Consortium was established, which included 20 research units from Poland. Initially, we dreamed of 3 GeV electron energy and a large measurement hall. There were teams designing lines. I was responsible for building a team designing an X-ray line for research using the microXRF, mikroXAS, and mikroCT techniques. The team included: prof. Marek Lankosz, prof. Czesław Kapusta, prof. Marek Pajek, prof. Andrzej Kuczumow and me. The first conference on the presentation of measurement line projects took place in Poznan. We were all very excited about these plans. We really wanted it to succeed. But as it usually happens, life writes its own scripts, and it was impossible to realize these dreams. Until one day my fellow physicists from the Jagiellonian University, constantly trying to obtain financing for the construction of a synchrotron, received proposals to submit an application to the Ministry and apply for the necessary funds. But these have been severely limited. And here a quick decision had to be made. We could build a smaller machine that would allow a series of research in the energy range still interesting for the scientific community, or we could give up. No, nobody gave up. The decision was made. "We are building a smaller synchrotron". I admit that it initially divided the scientific environment a lot, but today, in the perspective of the years, when we can boast of a very good research tool located in Krakow at the National Synchrotron Radiation Center - Synchrotron SOLARIS, no one has any doubts that it was a good decision.



Laying the foundation stone for the construction of the synchrotron SOLARIS. From the left in the first row: prof. Marek Stankiewicz, prof. Wojciech Nowak, prof. Karol Musioł (Rector)

The cooperation between the Society and the Synchrotron SOLARIS is still tightened, as evidenced by the initiative to jointly organize the National Synchrotron Radiation Users Symposium and the SOLARIS Synchrotron Users Meeting as "JOINT MEETING OF PSRS AND SOLARIS USERS". This year, such a meeting will be held for the second time in history. It has been permanently included in the SOLARIS and the Society's calendar of events.

Thanks to the initiative of Prof. Wojciech Paszkowicz, for twenty years, we have been publishing a Bulletin containing interesting scientific articles, including abstracts from organized schools and conferences. In this way, we try to reach the widest possible scientific community not only in Poland but also abroad. There are many examples of activities undertaken by members of the Society for the development of scientific research using synchrotron radiation or free-electron lasers. Examples include the recent initiatives of the School on Free Electron Lasers (FEL) for Beginners, establishing a consortium of users of FEL sources, or an application to the Ministry of Education and Science to support Polish users of the European Free Electron Laser.

From the perspective of thirty years of the Society's activity, it should be emphasized that we are the most dynamically operating Synchrotron Society and at the same time the oldest in the world. It is thanks to determination, mutual cooperation, and understanding. Understanding the need to popularize synchrotron science, we act *pro publico bono*. None of us count the time we spend on these activities. We don't have holidays. No matter what, each of us is always available. And it doesn't matter if he/she is visiting a distant country or holding his/her little happiness in his/her hands. It doesn't matter if it's morning or evening. If there is a need for action, we simply are. This is what I want to thank my colleagues

- all members of our Society. Looking to the future, I hope that in the next thirty years Society will be able to boast of achievements in science equal to the Nobel Prize.

As the fifth President of the Polish Synchrotron Radiation Society, I would like to thank all my predecessors, and members of the Boards and Audit Committees for their selfless work, full of dedication. For initiatives aimed at improving the quality of research with the use of synchrotrons and free-electron lasers. Thank you for disseminating knowledge about research opportunities and encouraging, especially young science adepts, to thoroughly learn about the world around us thanks to the possibilities offered by interdisciplinary research using synchrotron radiation.

I would also like to thank prof. Andrzej Kisiel that he was my mentor, teacher, and still is a friend.