

The 10'th anniversary of Biological Physics at the Institute of Physics

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It is time to celebrate an important anniversary. Nearly 10 years ago, on January 15, 2004, a new unit was formed at the Institute of Physics by a decision of Prof. Jacek Kossut, the director of the Institute. The unit was named as Group of Biological Physics. It was the fifth group in the Laboratory of X-ray and Electron Microscopy (SL1.5) headed by Prof. Krystyna Jabłońska. The Group itself was headed by Prof. Marek Cieplak.

It took years to form the Group and the process was painful. The initiative came from Prof. Marek Cieplak and Dr. Andrzej Sienkiewicz who were colleagues at ON4 - an Institute's division which then went under the name of Division of Spectroscopy of Semiconductors. They both had their first biology-related publications in 1995: Sienkiewicz in J. Am. Chem. Soc. on electron nuclear double resonance studies of a glycopeptide antibiotic bleomycin and Cieplak in Proc. Natl. Acad. Sci. USA about a lattice model of proteins that grew out of considerations of spin glasses. Their involvement with biophysics kept growing stronger ever since. The new Group started to function on February 16, 2004 - the day Dr. Anna Niedźwiecka joined the Institute and the two founders. She came from the Division of Biophysics of the Institute of Experimental Physics at the University of Warsaw. Marek Cieplak also originates from the University of Warsaw - he has worked at the Institute of Theoretical Physics between 1973 and 1989. Other members of the Group were Associate Professor Ewa Sobczak (who came from another group in the host Laboratory), Dr. Tomasz Kobiela, and Joanna Kwiecińska (now Sułkowska) - a graduate student.

The main task was to establish a working laboratory. It happened in February 2006 in the so called Hall C. Its 100 m² of space, formerly a storage area, was remodeled into a nice and air-conditioned modern laboratory designed by Anna Niedźwiecka. The first major apparatus was a spectrofluorometer (Fluorolog). The funding came from the Ministry of Scientific Research and Information Technology. A later funding came from the European programme "Increase of Competitiveness of Enterprises" as a bigger package for the Institute and awarded to Prof. Leszek Sirko. Further extensions of the laboratory came in July 2008 and were funded by the Foundation of Polish Science).

In January 2010, the Group became an independent division called Laboratory of Biological Physics SL4. The event came without any change in the leadership. The functioning of the Laboratory has been helped tremendously by obtaining funding from the Operational Programme Innovative Economy grant for the project NanoFun - a national consortium headed by Anna Niedźwiecka). As a result, the laboratory space has expanded in March 2012 and so did its equipment. The list what we currently have includes: atomic force microscope (Agilent), spectrometer (Varian), Langmuir-Blodgett trough (NIMA), apparatus for gel electrophoresis (BioRad), two spectrofluorometers (Jobin Yvon Horiba and Varian), two Zeiss confocal microscopes, PicoQuant system for time-resolved spectroscopy (like FRET and FLIM), a system for chromatography HPLC/FPLC, apparatus for studies of luminescence, two computer clusters, and lots of less expensive equipment that was purchased mostly from individual grants. We have participated in several European research consortia. Participation in two more European-level projects, e.g. FiberFuel, is just starting.

Some people left (Sienkiewicz in 2006 for Ecole Polytechnique Federale Lausanne) or retired (Sobczak, about the same time), some new people joined. Dr. Michał Wojciechowski, a theorist, came in 2006 from the University of Warsaw. Prof. Danek Elbaum joined in 2007 after several years at the

Nencki Institute of Experimental Biology in Warsaw and about 30 years in the US (Columbia, Fordham, Albert Einstein College of Medicine, NIH). Dr. Joanna Grzyb, a biologist, came in 2008 and generated many grants that changed the look of the laboratory. She studied at the Jagiellonian University in Cracow and held a postdoctoral position in Israel at the Weizmann Institute. Dr. Remigiusz Worch came in 2011 (University of Warsaw and Technical University of Dresden) and Dr. Bartosz Rozycki in 2012 (University of Warsaw, Max Planck Potsdam, and NIH). Several graduate students got their Ph.D. degrees: Joanna Sułkowska (2007, with distinction), Szymon Niewieczera (2009), Mateusz Sikora (2012, with distinction), and Anna Korczyk-Baranowska (2013).

We have organized four international conferences with a participation of just under 150 in each: Structure and Function of Biomolecules I (2004), II (2006), Biomolecules and Nanostructures (2011) - all in Będlewo - and Biomolecules and Nanostructures 4 (2013) in Pułtusk. Our research is interdisciplinary and its methods are both experimental and theoretical. It currently deals with molecular understanding of the process of translation in cells, redox active proteins, biosensors, upconverting nanoparticles as imaging tools, biological membranes, modeling of large conformational changes in proteins and their complexes such as virus capsids, proteins near solid surfaces, and several other subjects. Together with the Institute of Biochemistry and Biophysics in Warsaw, we run a joint seminar since 2004 (at least since October 11). It seems that we are happy, appreciated, and satisfied at the Institute, but we are badly starved for office space.