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On April 27, 2010, RNDr. Jana Poltierová Vejpravová, Ph.D., received the prestigious Scopus Award for young scientists for her work which is a major contribution to experimental and theoretical description of spin states in solid-state matters. The awards were handed out for the first time in the Czech Republic by the largest publisher of scientific journals and databases, Elsevier Science.

*What were your feelings, when you found out that you received such a prestigious award?*

I have to admit I was a little surprised when the organizers told me I was among the recipients. I didn't expect it and was surprised that my research, which I consider steady and standard work, was awarded. In the end, I was very happy.

*You set a rather high standard for yourself...*

The article I published focuses on the co-existence of superconductivity and magnetism, which is a topic that I'm not researching to that extent anymore. The article describes the fact that under certain conditions, it is possible in some materials for both superconductivity and magnetism to occur, which is not possible with common superconductors. This has implications for descriptions of electron states, which can be applied to some of the materials which are viewed with high hopes in electronics, such as graphene or so-called spintronic materials. In the end, solid-state physics is mostly about symmetry and once you get a general grasp of what is going on in the matter you can expand your findings to other systems. Applications of our physics research allow building of fast computers, amazing mobile phones and cars. Without solid-state physics, there would be no MP3 players or iPods.



Photo: Marie  
Čechová

*116 works spanning from medicine to social sciences were nominated for the award. Did any of them caught your attention?*

Except for the quantum gate by Michal Mičuda from Olomouc and the work by Martin Srnec from the Academy of Sciences, there wasn't anything among the winning works that I could understand. Still, it was nice to find out that many people who work in bigger teams were in the competition too, like professor Forejt's team. These are top teams coordinated so that each member works on one particular aspect of research, which brings really outstanding results. It's great to get among people like this.

*You mentioned that you had already shifted your focus to another topic...*

For some time now, I have worked with colleagues from the Faculty of Science on nanomaterials, mostly magnetic nanoparticles in matrices. We secured grants in this field for projects aimed at creating therapeutics for cancerous tumors consisting of magnetic particles and other substances. I'm returning to the roots, focusing more on chemistry. We'll do a lot of synthetic work and then, of course, physical interpretation. We must keep in mind the future commercial application

of our materials. My colleague from the Faculty of Science Daniel Nižňanský introduced me to this kind of research and I am very grateful for it. It is a very interesting field and offers opportunity for direct application, which is great.

*Working this hard, you don't seem to get any sleep. What is your normal work schedule?*

I do research ten hours a day, but the best time for measurements is on the weekend or at night, because you are not distracted by teaching, students or office work. At our department, we have excellent, really top-notch facilities for diffraction methods and professor Václav Holý is a world-renowned expert in the field. We have excellent equipment for magnetic measurement, too. However, now I'm doing interdisciplinary research and many methods are not available here. I have a great team of three Master's students, but we cannot compare to the large teams at the Academy of Sciences, for example in genetics.

Thank you

P.K.

Translation: Jaroslav Švelch