

## Press release

### New Chapter in the Research with Synchrotron Radiation

**Junior scientist from Berlin extends the range of application of X-ray methods and receives prestigious award.**

Berlin, July 31, 2009

Dr. Emad Aziz Bekhit from the Helmholtz-Zentrum Berlin für Materialien und Energie (HZB) is this year's recipient of the renowned Dale Sayers Award—an award presented every three years by the International X-ray Absorption Society (IXAS), honouring successful junior scientists.

The award will be presented in Camerino (Italy) on July 31, 2009 during the largest conference on research with X-rays worldwide.

The award is honouring the entire work Emad Aziz has published in his postdoctoral position during the last two years. His work made it possible to extend the range of application of X-ray methods to liquid samples, which had been inaccessible up to now, thereby opening up new exciting fields of research. At the storage ring BESSY II, Dr. Aziz succeeded, for example, in using synchrotron radiation, a special kind of X-radiation, to examine proteins in their natural environment. Up to this point, this had not been possible because the proteins had to be crystallised and therefore taken out off their natural environment to be examined. The samples had to be subjected to an ultra-high vacuum. Under these conditions, the water evaporates extremely fast, the sample falls dry, and the vacuum cannot be maintained. Emad Aziz countered this problem by constructing a completely new experimental chamber. In it, he exchanged air with a helium atmosphere and the diluted sample with a thin fluid jet. Since photons penetrate the helium atmosphere in the UV and X-ray range, spectroscopic analyses of the matter dissolved in water are made possible.

In his experimental chamber, the scientist from Berlin studied—amongst other things—the interaction of different medications with proteins, as well as the oxygen uptake in haemoglobin. He quickly extended his spectrum of samples, rendering the experimental facility interesting for applied research. Not only life scientists will profit from it but photovoltaics research as well. Solar cells can now be prepared to allow new exciting studies of the charge transfer within.

The thirty year old Aziz is already recipient of the 2008 Ernst Eckhard Koch Award (dissertation award for the research with synchrotron radiation). At the HZB, he is by now leading his own workgroup. Future focal points of his projects are the applied research to optimise solar cells as well as biological activities under physiological conditions. Dr. Aziz shares the 2009 Dale Sayers Award with Dr. Keisuke Hatada (Japan).

The **Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)** operates and develops large-scale devices for the research with photons (synchrotron radiation) and neutrons while providing internationally competitive or even unique experimental possibilities. Every year, they are utilised by more than 2,500 guests from universities and/or other research facilities around the world. The Helmholtz-Zentrum Berlin carries on materials research on topics, which put special demands on the large-scale devices. Research topics are materials research for energy technologies, magnetic and functional materials. Main focus of the solar energy research is the development of thin film solar cells, while developing chemical fuels from sunlight is another important object of research. The HZB employs a staff of around 1,100 people: 800 employees work at the campus Lise Meitner in Berlin-Wannsee, another 300 at the campus Wilhelm Conrad Röntgen in Berlin-Adlershof.

The HZB is a member of the Helmholtz-Gemeinschaft Deutscher Forschungszentren e.V., the biggest scientific organisation in Germany.

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