Press Release

BERTHOLD LEIBINGER STIFTUNG

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Berthold Leibinger Zukunftspreis 2008

“Single Molecule Optical Biophysics and Nonlinear Biophotonics”

Professor Dr. Xiaoliang Sunney Xie,
Harvard University, Cambridge, USA

Xiaoliang Sunney Xie, Professor at Harvard University in Cambridge, USA, is one of the founding fathers of single-molecule biophysical chemistry, specifically single-molecule enzymology. For his valuable contributions to high-resolution optical imaging techniques, he received the Berthold Leibinger Zukunftspreis.

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The prize, awarded by the Berthold Leibinger Stiftung since 2006, has a prize money of 20,000 Euros. Nobel laureate and member of the Jury Theodor Hänsch presented it to Xie on September 15. in Ditzingen. Other than the Berthold Leibinger Innovationspreis the Berthold Leibinger Zukunftspreis is a research prize where the jury selects the prizewinner without a publicly announced competition.

Professor Xiaoliang Sunney Xie is one of the founding fathers of single-molecule biophysical chemistry, specifically single-molecule enzymology. For his valuable contributions to high-resolution optical imaging techniques, Xie has been selected to receive the Berthold Leibinger Zukunftspreis for outstanding research in applied laser technology. The prize will be presented to Xie by jury member Professor Theodor Hänsch at an award ceremony in Ditzingen, Germany on September 15, 2008. Worth 20,000 euro, the prize is being awarded for the second time. The first recipient was Professor Jeffrey H. Kimble of Caltech, in 2006, for his work on Cavity Quantum Electrodynamics.

A recent success of the Xie group at Harvard’s Department of Chemistry and Chemical Biology is a real-time molecule-by-molecule movie of protein production in live cells. The direct observation of single fluorescent molecules in single cells is of great importance in probing gene expression. This generation of proteins according to the genetic codes in DNA is a core process of live regulation in cells. A better understanding of this process will enable scientists to develop new strategies to fight against many diseases. Sunney Xie is also well known for his development work on CARS (coherent anti-Stokes Raman Scattering) microscopy. Due to his relentless efforts, CARS

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microscopy has become one of the most important developments in light microscopy. Xie not only first recognized the full potential of CARS

in biological imaging, but eliminated most of its technical challenges as well. Unlike fluorescence microscopy, CARS can be used when the observed material cannot be tagged with or is intolerant of fluorescent markers. Xie's team has demonstrated the use of CARS microscopy to identify tumors and monitor metabolism.
Born in Beijing, China, Professor Xie earned his doctorate in chemistry at the University of California at San Diego in 1990. After postdoctoral fellowship and Chief Scientist positions at the University of Chicago and the Pacific Northwest National Laboratory respectively, he became Professor of Chemistry at Harvard University in 1999. Xie has been decorated with prestigious awards and prizes, among them the NIH Director's Pioneer Award in 2004 and the Willis E. Lamb Award for Laser Sciences and Quantum Optics in 2007.