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## ***JPK reports on the first images of DNA's double helix in the molecule's natural environment by AFM.***

*Berlin, 28th August 2012: JPK Instruments, a world-leading manufacturer of nanoanalytic instrumentation for research in life sciences and soft matter, reports on the use of AFM systems in the group of Dr Bart Hoogenboom of the London Centre for Nanotechnology.*

Lecturer at the London Nanotechnology Centre and the Department of Physics and Astronomy, University College London, Dr Bart Hoogenboom's main research interest is where nanotechnology tools may be used to study and manipulate single biomolecules. Specifically, he applies AFM as the only instrument that provides sub nm spatial resolution on large biomolecules that are "alive", or in more scientific terms, they are still functional and may be studied in the natural environment, i.e. aqueous salt solution. This means that AFM can visualise biological processes while they happen, at the scale of single molecules. In addition, it enables him to study a number of other properties that help to understand how biomolecules work, e.g., electrostatic charge and nanomechanical rigidity. More practically, it is a technique that his group understands very well which makes it easier to keep a competitive edge in their research.

Dr Hoogenboom's laboratory collaborates with JPK to look at ways to push instrumentation to new limits of resolution and imaging. While having selected JPK's NanoWizard® AFMs for biological imaging because of their user-friendliness, they also help to achieve higher throughput for their experiments. Dr Hoogenboom continues: "An additional advantage is their compatibility with inverted optical microscopes, which make it easy to get larger-scale images of what we are watching at the nanoscale. For experiments at higher spatial and time resolution, we also use home-built microscopes. While using these microscopes, we benefit from our joint project with JPK, where JPK has provided us with their latest AFM "Vortis" controller and continues to give us technical support in pushing the limits of our (and their) instrumentation."

This has enabled Dr Hoogenboom to really push the limits of AFM imaging. This has resulted in a recent publication in Nano Letters which reported on the first visualization of the DNA double helix in water. The paper may be found online at <http://pubs.acs.org/doi/abs/10.1021/nl301857p>.

Dr Hoogenboom explains the significance of his work. "The resolution obtained on DNA is an example of our success in extending the capabilities of AFM instrumentation. Most present-day microscopes do not achieve any higher resolution on DNA than was achieved with the first AFM experiments in the early 1990s. There are a few earlier reports of observations of the periodicity of the DNA helix along its longitudinal axis. The distinctive feature of our recent results is the visualisation of both DNA strands in the double helix. It is not new that DNA is a double helix, but about 60 years after its discovery, it is the first time that we see it in the molecule's natural, aqueous environment."

For more details about JPK's specialist products and applications for the bio and nano sciences, please contact JPK on +49 30533112070, visit the web site: [www.jpk.com](http://www.jpk.com) or see more on Facebook: [www.jpk.com/facebook](http://www.jpk.com/facebook).

**Attachment:**



*Dr Bart Hoogenboom from UCL with his advanced AFM set up controlled by JPK's Vortis system (insert)*

For a high resolution copy of the image, either right click to download or contact Jezz Leckenby at Talking Science.

**About JPK Instruments**

*JPK Instruments AG is a world leading manufacturer of nanoanalytic instruments that enable unparalleled access at the nanotechnology level. JPK was recognized as Germany's fastest growing nanotechnology company in 2007 and 2008 (Deloitte). The product portfolio is based around atomic force microscopes and optical tweezers for a wide range of applications, from soft matter physics to nano-optics, from surface chemistry to cellular and molecular biology. Leading-edge instruments from JPK are used by the most renowned research institutes across the world. Headquartered in Berlin and with operations in Dresden (Germany), Cambridge (UK), Singapore, Tokyo (Japan) and Paris (France), JPK maintains a global network of distributors and support centers and provides on the spot applications and service support to an ever-growing community of researchers.*

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