

JPK Instruments contact:

Gabriela Bagordo: +49 30726243 500

Media contact:

Jezz Leckenby: +44 (0)1799 521881

JPK reports on how researchers at the Free University of Berlin are using the NanoWizard® ULTRA Speed AFM to study carbon-based nanoparticles (from graphene sheets).

Berlin, December 12th 2017: JPK Instruments, a world-leading manufacturer of nanoanalytic instrumentation for research in life sciences and soft matter, reports on the research of the Eigler Group in the Institute for Chemistry & Biochemistry at the Free University of Berlin. They are studying carbon-based nanoparticles with JPK's NanoWizard® ULTRA Speed AFM system as part of a development of new bio-electrical devices.

PhD student, Christian Halbig, is a member of the research group led by Professor Dr Siegfried Eigler at the Institute of Chemistry & Biochemistry at the Free University of Berlin (FUB). The group is focused on the preparation and characterization of carbon-based nanoparticles. They mainly use single layered graphene sheets obtained from graphene oxide which are then modified by different functionalization techniques. These synthesized nanoparticles are then further tested for biological and technical applications in, for example, electrical devices.

AFM is one of the main tools used to have a closer look on the nanoparticles. Images obtained from AFM provide detailed information about the particle size distribution from the micron scale down to nanometer sized particles as well as particle thickness before and after functionalization. AFM is used in conjunction with 2D Raman spectroscopy and light microscopy to study graphene coated onto SiO₂/Si wafers.

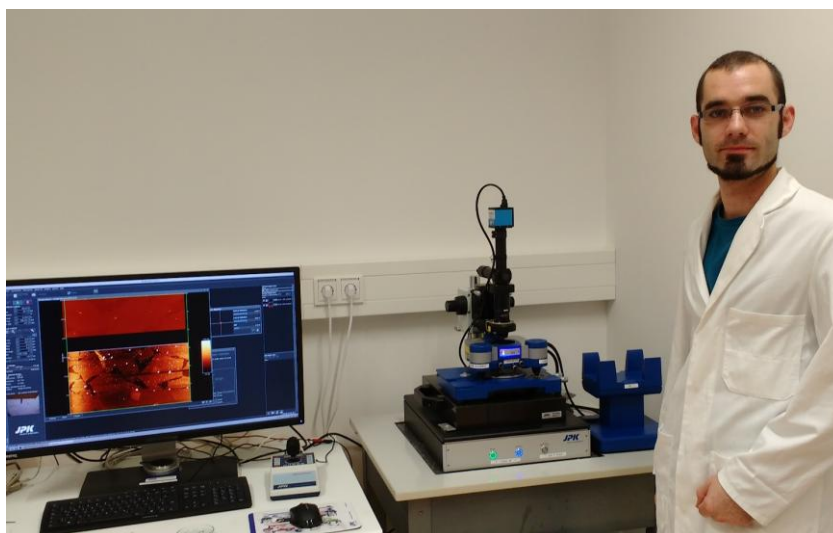
Asked about the benefits of using the JPK NanoWizard® ULTRA Speed AFM system, Mr Halbig says, "The biggest benefit of our new JPK AFM is its programmability. It allows us to break the limits of the scanner by the automatic generation of individual small AFM images. These can be merged then to get large area images of coated surfaces."

The JPK AFM is a tip-scanning system controlled by a powerful software. The cantilever is mounted onto a glass cantilever holder with an optical access from the top. With this setup, it is possible to measure in liquids (water) as well as in air without changing the configuration. In addition to standard imaging modes such as contact and AC, JPK's proprietary Quantitative Imaging (QI™) mode is available. QI™ mode works by making

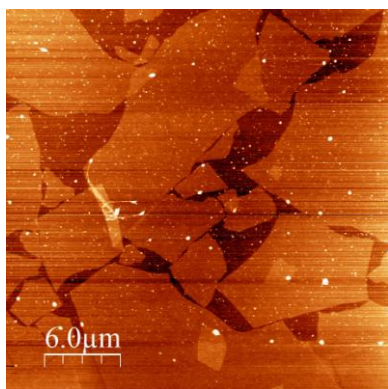
point-to-point force-distance curves making the analysis of, for example, mechanical properties possible. The automated setup allows the use of scripts to plan experiments and make statistical analysis from different sample areas. The system used at the Free University of Berlin also includes the more specialized electrical modes such as Kelvin Probe and Conductive AFM for the determination of the work function or electrical inhomogeneities of samples.

For more details about JPK's AFM systems and their applications for the materials, life & nano sciences, please contact JPK on +49 30726243 500. Alternatively, please visit the web site: www.jpk.com or see more on Facebook: www.jpk.com/facebook and on YouTube: <http://www.youtube.com/jpkinstruments>.

Attachment



Mr Christian Halbig of the Eigler Group at FU-Berlin with the JPK NanoWizard® ULTRA Speed AFM (above).



An image of a Langmuir-Blodgett film of graphene imaged using the JPK NanoWizard® ULTRA Speed AFM (left).

For high resolution copies of the images, 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 - particularly atomic force microscope (AFM) systems and optical tweezers - for a broad range of applications reaching from soft matter physics to nano-optics, from surface chemistry to cell and molecular biology. From its earliest days applying atomic force microscope (AFM) technology, JPK has recognized the opportunities provided by nanotechnology for transforming life sciences and soft matter research. This focus has driven JPK's success in uniting the worlds of nanotechnology tools and life science applications by offering cutting-edge technology and unique applications expertise. Headquartered in Berlin and with direct operations in Dresden, Cambridge (UK), Singapore, Tokyo, Shanghai (China), Paris (France) and Carpinteria (USA), 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.

For further information:

JPK Instruments AG

Colditzstrasse 34-36

Haus 13, Eingang B

Berlin 12099

Germany

T +49 30726243 500

F +49 30726243 999

www.jpk.com

bagordo@jpk.com

Talking Science Limited

39 de Bohun Court

Saffron Walden

Essex CB10 2BA

United Kingdom

T +44 (0)1799 521881

M +44 (0)7843 012997

www.talking-science.com

jezz@talking-science.com