Nanotechnology for Life Science

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JPK reports on the multiple uses of the NanoWizard® AFM system at the Korean Research Institute of Chemical Technology (KRICT).

Berlin, 29th October 2015: JPK Instruments, a world-leading manufacturer of nanoanalytic instrumentation for research in life sciences and soft matter, reports on the multiple applications where their NanoWizard® AFM system is being used at the Korean Institute of Chemical Technology to study soft materials such as biomolecules and polymers.

Established in 1976 for R&D of chemical technology in Korea, the Korean Research Institute of Chemical Technology (KRICT) has helped drive the growth of the country's chemical industry. The focus is on the development of world-class key technologies. There are four key research fields: the development of eco-friendly chemical process technology; the development of high value-added green chemical materials; the discovery of new substances for disease treatment; and finally, the development of green convergence chemical technology.

Dr Yu Jin Jung is a senior research scientist at Research Center for Convergence Nanobiotechnology (RC^2NT) of KRICT where her work involves the study of a broad range of biomaterials. The Director of RC^2NT is Professor Dr Yung Doug Suh. He is also affiliated as Professor at SungKyunKwan University. Dr Jung has applied a number of microscopy techniques including transmission electron microscopy (TEM) and atomic force microscopy (AFM). Having used a variety of different makes of AFM, she has settled on the JPK NanoWizard® because of its advantages when performing force measurements.

AFM is being applied in many different experiments. These include high resolution imaging of a single biomolecule together with single molecule force spectroscopy (SMFS) and force mapping of polymers: DNA, RNA, proteins, cells, etc. The AFM is also being interfaced with spectroscopy techniques including fluorescence and Raman to enable chemical mapping and species identification. It will be modified to become a new generation SMTERS(Single Molecule Tip-Enhanced Raman Scattering) platform under the guidance of Professor Suh, one of the co-inventor of TERS in 2000.

Talking about her work, Dr Jung said "For our imaging work, JPK's AFM has proved particularly useful for observing the shape, structure, and organization of DNA

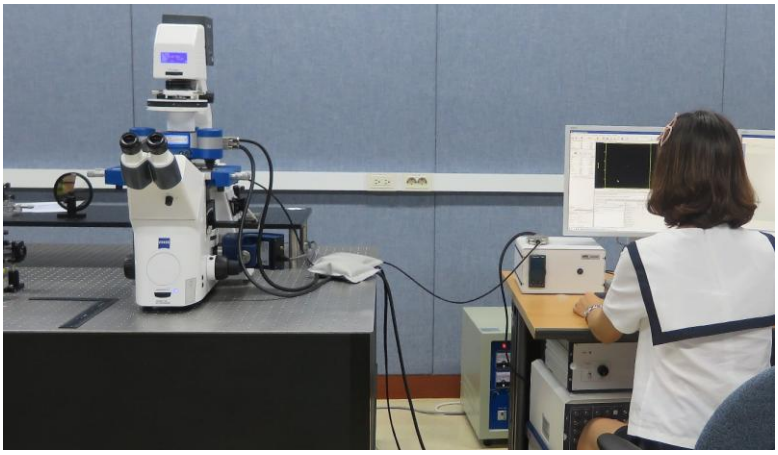
oligonucleotides, viruses and cells in buffer solution in real-time. We use it also for our SMFS studies. The NanoWizard® AFM enables us to study the interactions of biological systems over scales ranging from single molecule to whole cells. It provides unprecedented possibilities for mapping the distribution of single molecule on the surfaces of cells. Viruses may be studied with nanometer spatial resolution."

Continuing, she said "JPK's AFM is specialized in field of force measurement and force mapping. When the force mapping was performed, several force curves on each pixel in a map was recorded. This function is particularly good for force mapping experiments due to the stochastic nature of single molecule interaction events."

Furthermore, under Professor Suh's guidance, the AFM is being interfaced with a homemade Raman spectroscopy system.

For more details about JPK's NanoWizard® AFM and their applications for the bio & 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 You Tube: http://www.youtube.com/jpkinstruments.

Attachment



Dr Yu Jin Jung with her JPK NanoWizard system at KRICT in South Korea

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

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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.

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