

The Latest Innovations in Atomic Force Microscopy and Its Related Techniques

Keywords:

AFM

PinPoint mode

SECM

SICM

SECCM

Abstract: Behind the bright scientific minds and their breakthrough discoveries are the scientific tools that enable them. To discover, one needs to visualize, measure and characterize the samples under investigation. As science moves into nanoscale world of research and development, Atomic Force Microscope (AFM) has been widely used as it provides various physical property information in nanometer scale resolution, not only in air but also in liquid and vacuum. However, conventional AFM suffers from measurement accuracy and operational complexity. In this talk, I would like to present the new, advanced AFM that has a separated x-y scanner from the z scanner, provides true non-contact mode, and renders automatic parameter setting capability. The new AFM not only provides quantitative data with high reproducibility, but it also operates as simple to use as a point and shoot digital camera. The new AFM PinPoint mode can precisely measure mechanical properties and electrical properties with controlled contact force at each measurement points. The nanopipette based Scanning Ion Conductance Microscopy (SICM) enables advanced Scanning Electrochemical Microscopy (SECM), Scanning Electrochemical Cell Microscopy (SECCM), as well as in situ live cell nano-microscopy. These new innovative advances in AFM will certainly help scientist around the world attain their coveted scientific breakthroughs.



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A handwritten signature in black ink that reads "Sang-il Park". The signature is fluid and cursive.

*Biography

Dr. Sang-il Park is the Founder and CEO of Park Systems Corp., a leading manufacturer of Atomic Force Microscope (AFM) solutions since 1997. Park Systems now has more than 1,000 of its AFM systems in use in over 30 countries around the world. Earlier, Dr. Park founded Park Scientific Instruments, the first commercial manufacturer of Atomic Force Microscope, where he served as the Chairman and CEO for 9 years from 1988 to 1997. Prior to founding Park Scientific, he worked with Prof. Cal Quate (The 2016 Kavli Prize Laureate) at Stanford University as a graduate student and research associate. Dr. Park obtained a B.S. in Physics from Seoul National University in 1981 and a Ph.D. from Stanford University in 1987. He has also a Mini MBA from the Stanford-AEA Executive Institute. Dr. Park research interests are nanotechnology, nanometrology, and scanning probe microscopy and its applications. He authored and co-authored numerous research papers, text books, and over twenty U.S. patents in the field of Atomic Force Microscope.

He has received numerous awards. Dr. Park received the Young Engineer Award by the National Academy of Engineering of Korea in 2007, Peter Drucker Innovation Award by the Peter Drucker Society in 2009, and Korea's Top 10 New Innovation Award as well as Industrial Nano Technology Award by the Ministry of Knowledge Economy in 2010 and 2012 respectively. Dr. Park also had the honor of being chosen among the "100 Most Influential Koreans in Next 10 years" in 2011 and 2014 by Dong-A Ilbo one of the leading daily newspapers in Korea. Recently, Park System Corp. receives Frost & Sullivan 2016 Global Enabling Technology Leadership Award. Sang-il Park served as a member of Presidential Advisory Council on Science & Technology from 2014 to 2015. He was promoted as a Senior Member of The National Academy of Engineering of Korea in 2015.