北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Surface Physics Lecture

Atomic force microscopy

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Time: 7: 30 Pm, Dec. 10, 2019 (Tuesday)

时间：2019年12月10日 （周二）晚上7:30

Venue: Room 307, Liu Qing Building, Peking University

地点：北京大学三教307

Abstract

What is atomic force microscopy (AFM)? How is it similar to and different from scanning tunneling microscopy (STM)? The lecture starts with asking the questions. We have developed two classes of atomic force microscopes by now; one operated with its probing tip in contact to the scanned object, and the other with its tip not in contact as much as possible. A microscope in the latter class exploits a mechanically vibrated cantilever (plate spring) to detect tiny force on the probing tip placed at its free end. The cantilever vibration is described as a forced oscillator. The basic mechanical dynamics, which every undergraduate student learned about, plays a major role here.

About the speaker

Hiroshi Onishi is a Professor in Department of Chemistry, School of Science, Kobe University. He obtained his PhD from The University of Tokyo in 1993, and was appointed as lecturer and associate professor of The University of Tokyo in 1996. In 1999, he was the leader of Surface Chemistry Laboratory, Kanagawa Academy of Science and Technology. Since 2004, he has been a professor of Kobe University. Prof. Onishi was the pioneer of frequency-modulation Atomic Force Microscopy (FM-AFM) for atomic-resolution characterization of liquid-solid interfaces, which has been commercialized by Shimadzu Corp. He has received many awards for his achievements, such as Japan Society of Vacuum and Surface Science, Society Award (2019), Fellow of Surface Science Society of Japan (2010), Yazaki Award (2004), Surface Science Society of Japan, Technical Award (2003), Nano-probe Technology Award (2002), Young Scientist Award by Catalysis Society of Japan (2001), etc. Prof. Onishi is now the Program Officer of Japan Society for the Promotion of Science and serves Surface Science Report as one of the editors.