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## **ELECTRONIC AND PHONONIC STRUCTURE MEASUREMENTS ON SUPERCONDUCTING SURFACES USING SCANNING TUNNELING MICROSCOPY**

**Young Kuk**

*Department of Physics and Astronomy, Seoul National University, Seoul 08826, South Korea*

The ability to measure the electronic or phononic structure on a solid surface is a great help in understanding the bulk or surface properties of the solids. Although it has been widely used to measure the electronic structure of the surface using scanning tunneling spectroscopy, it is known that measurement of phonons is not easy. This is because the phonon signal is not well measured in the tunneling condition of scanning tunneling microscopy. In this talk, tunneling conditions capable of phonon measurement are presented and experimentally demonstrated. We will use this experimental method to understand the electrical structure of superconducting materials and to show STS results when the phonons contribute to the formation of electron pairs in those materials.