

Dynamics of Nanoscale Contact Formation

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Understanding and establishing effective contacts in a ubiquitous problem in all nanoscale device structures. In this talk we describe recent advances in nanoscale contact formation using cryogenic STM. By carefully controlling the composition of the contact probe it is possible to measure changes in the local density of states and phonon spectrum as the contact is established. Precise measurement of the current reveal different signatures associated with (i) tunneling, (ii) forces and (iii) atom scale motion. We demonstrate how each can be used to understand contact formation and present data in the case of contact with a single molecules, nanoscale regions of Si substrate and SWNTs.

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