

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

An ultrahigh vacuum, variable temperature scanning tunneling microscope E.W. HUDSON, W.D. WISE, KAMALESH CHATTERJEE, M.C. BOYER, MIT — We will discuss the design and operation of an ultrahigh vacuum, variable temperature (2 K – 300 K) scanning tunneling microscope (STM) system. The STM has been designed to minimize tip-sample displacements with thermal variation, allowing the tracking of single atoms over a wide range of temperatures. We will first describe STM details such as sample holder and capacitive position sensor design, as well as tip shielding to reduce scanner cross-talk. We will then discuss elements of the support system, including a low-temperature sample storage area to allow quick sample exchanges, a variable temperature cleaver and a novel counterweight system for quickly and safely lifting and lowering the experimental dewar. Finally, we will point out some common problems found in STM systems and show how we diagnosed and solved these problems.

Eric Hudson
MIT

Date submitted: 20 Nov 2006

Electronic form version 1.4