



Figure 1: Simultaneous scanning tunneling microscopy (STM) and scanning tunneling spectroscopy (STS) imaging of a hydrogen passivated Silicon surface. A 2 kHz sinusoidal signal with the amplitude of $\pm 2.5V$ is applied to the sample. The scanning speed is 100 nm/sec. The scan size is 16×16 nm. (a) The topography image is obtained by closing the feedback loop on the a_1 signal, the in-phase component of current with the modulation. (b) a_1 image of the same area. (c), and (d) The tunneling current image at the voltages - 2.11 V, and + 2.26 V, respectively obtained from the I-V curve data of each pixel.