

Scanning tunneling spectroscopy in ultra thin TiN films

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We have studied ultra thin films (thickness = 5-7 nm) of titanium nitride (TiN) with scanning tunneling microscopy and spectroscopy at 100 mK and under magnetic fields. We obtain atomic resolution and resolve nanocrystallites with different orientations and sizes between 5 nm and 7 nm. We compare interplanar spacings measured from the atomic images with those reported for face centered cubic TiN structure.

We have measured different homogeneously disordered samples, and present a comparative study of the tunneling spectroscopy results in these films down to 100 mK and at high magnetic fields upto 7 T.