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Sputter deposited TiN films studied by low temperature STM MICHAEL DREYER, WAN TING LIAO, PENG XU, University of Maryland, KEVIN OSBORN, BOB BUTERA, Laboratory for Physical Sciences — Titanium nitride films show a high kinetic inductance when used in superconducting devices. The magnitude of the effect crucially depends on the preparation conditions and resulting film morphology. This low temperature STM study seeks to shed light on the underlying mechanism by examining the topographic and electronic structure. We studied polycrystalline TiN films grown in an external sputtering system under the same conditions as for device fabrication. Since the films are produced in an external system they have to be cleaned after introducing them into the UHV system attached to the low temperature STM. The surface consists of 5-10 nm diameter crystallites with an intricate surface texture. Spectroscopy shows a wide verity of curves likely due to varying chemical composition. In addition we observed localized zero bias conduction peaks and indication of local coulomb blockade. The data will be discussed in the presentation.

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