

Towards a Procedure for the Template Free Growth of Te Nanowires Across an Insulator by Electrodeposition

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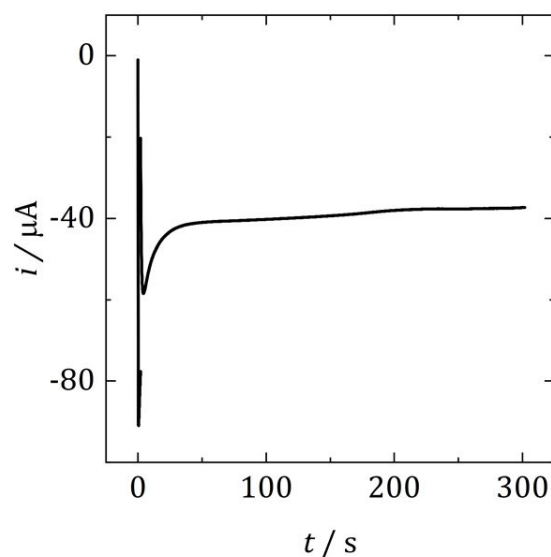


Figure S1: representative current transient for the electrodeposition of Te NWs obtained using an electrolyte composed of 0.75 mM $[\text{N}^n\text{Bu}_4]_2[\text{TeCl}_6]$ and 100 mM BMP-I in CH_2Cl_2 . The potential was stepped to -1.75 V for 2 s then to -0.4 V for 300 s. WE: TiN lateral growth substrate, CE: Pt disc, RE: Ag/AgCl.

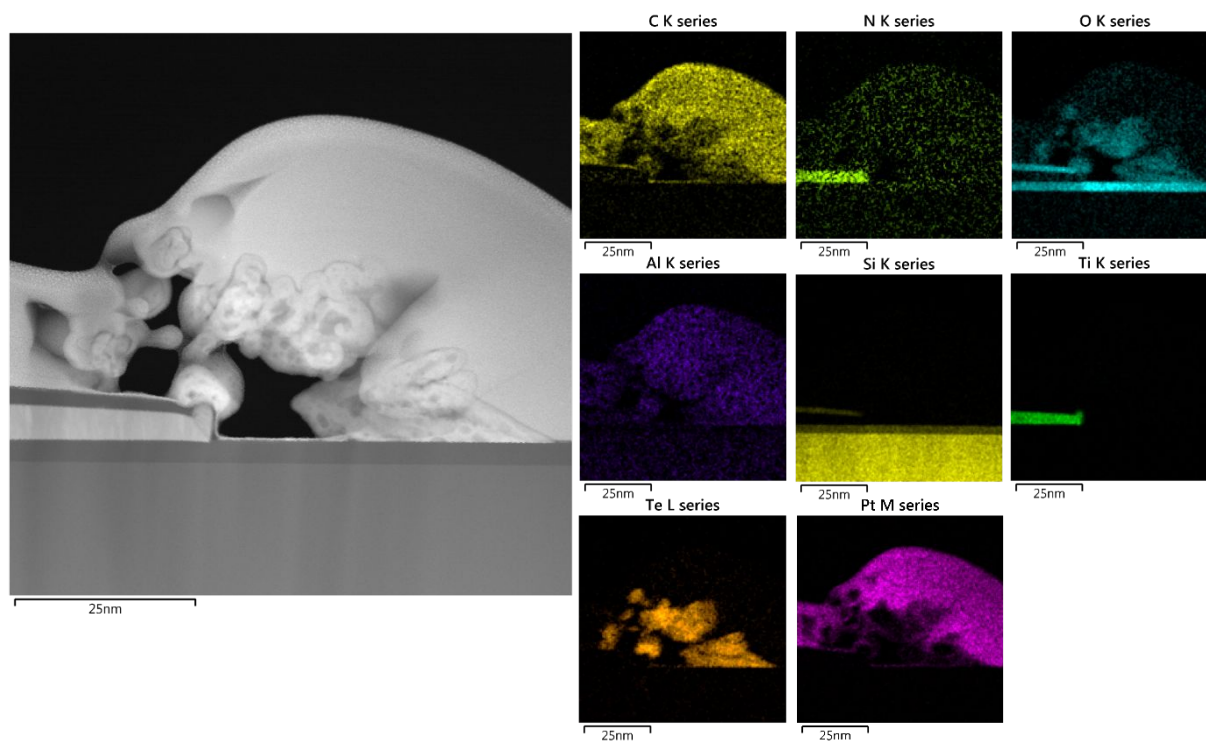


Figure S2: STEM cross-section of electrodeposited Te NWs, along with EDX mapping showing the elemental composition at each location.

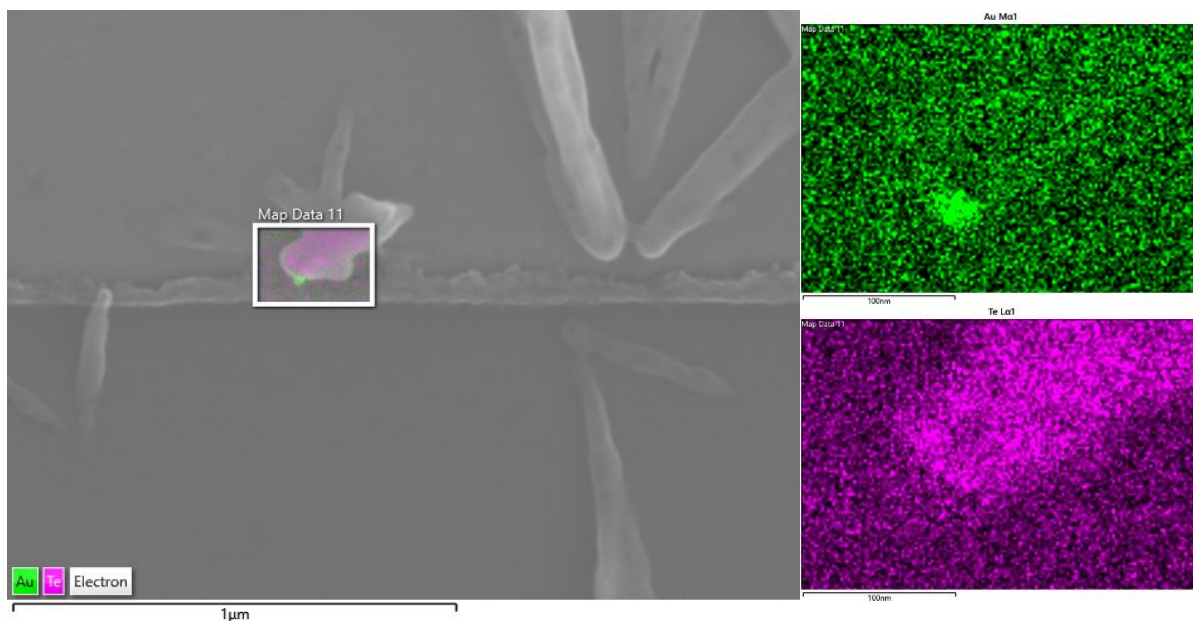


Figure: S3: EDS map showing Te growth directly from pre-treated Au.

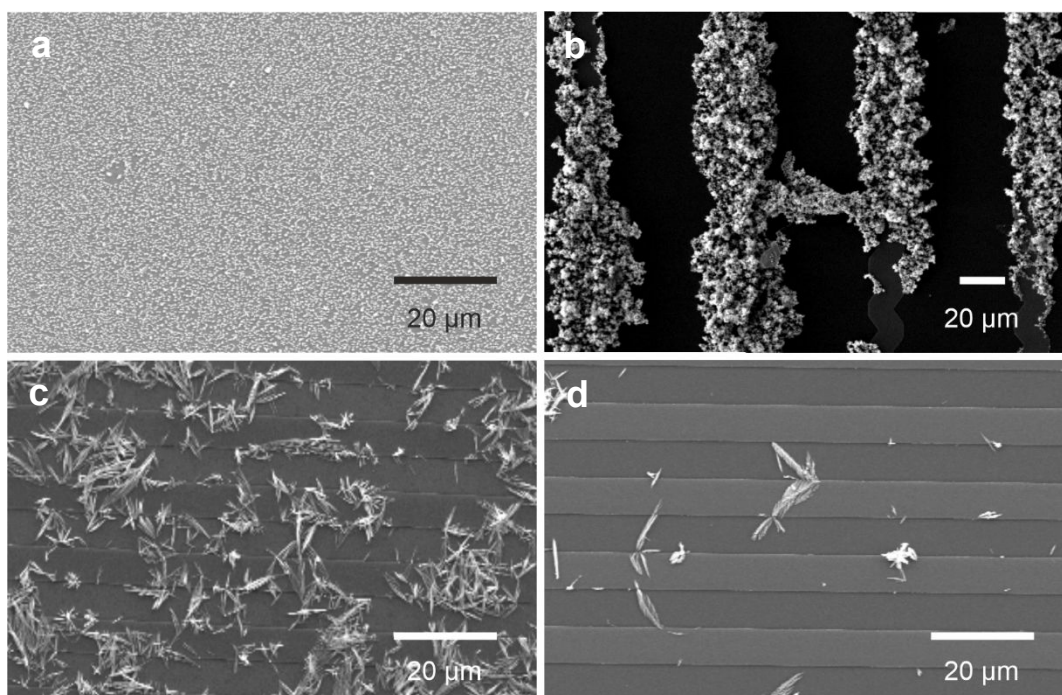


Figure S4: SEM images showing the effect of removing various experimental steps on the electrodeposition of Te NWs. a) without a lateral growth substrate, deposited onto a disc electrode, b) without BMP-I, deposited with 100 mM $[N^nBu_4]Cl$ as the supporting electrolyte, c) without Au pre-treatment, d) without a nucleation pulse.

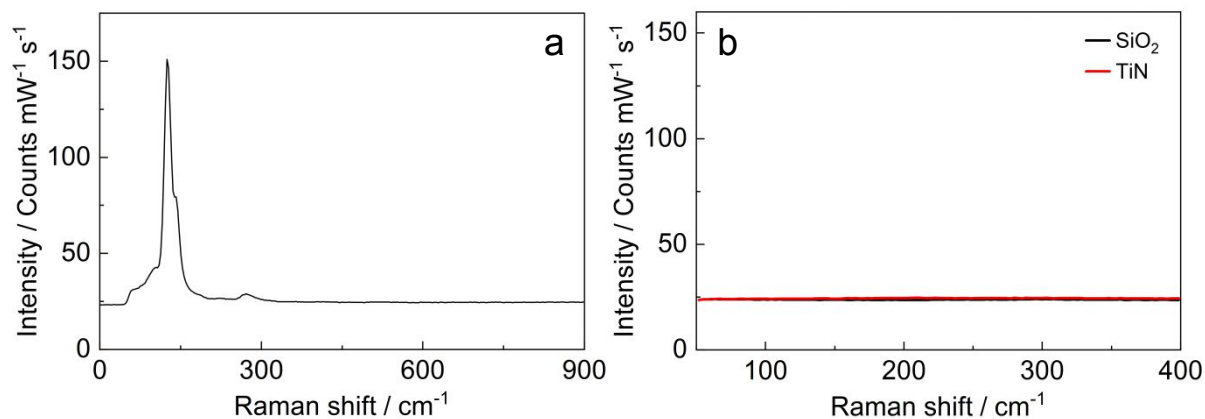


Figure S5: representative Raman spectra of a) wider range of electrodeposited Te, b) regions of SiO_2 and TiN on lateral growth substrates. collected with a 532 nm laser.

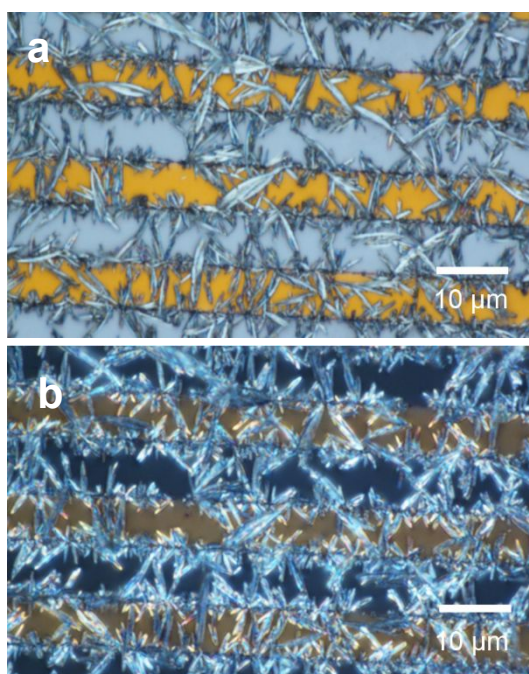


Figure S6: The effect of polarized light on optical micrographs of electrodeposited Te NWs with a) unpolarized and b) cross-polarized light.