

Low-Temperature Atomic Layer Deposition of Low-Resistivity Copper Thin Films Using $\text{Cu}(\text{dmap})_2$ and Tertiary Butyl Hydrazine

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Table of Contents

Figure S1: SEM images of Cu films deposited with different TBH pulse lengths

Figure S2: SEM images of Cu films deposited on different substrates

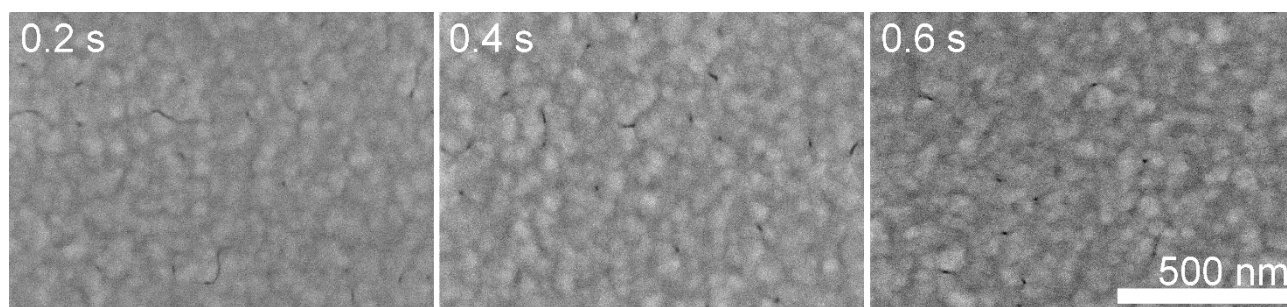


Figure S1. SEM images of Cu films deposited on Si with native oxide with different TBH pulse lengths followed by 1.0 s purge at 120 °C. The deposition comprised 1500 cycles, and the $\text{Cu}(\text{dmap})_2$ pulse and purge were 1.0 s.

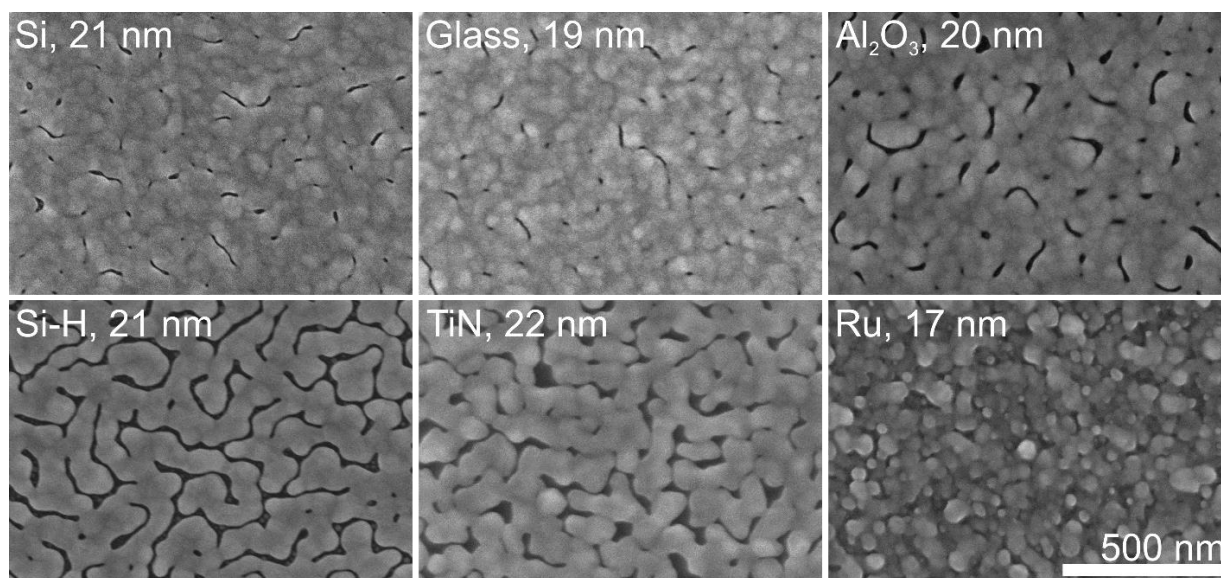


Figure S2. SEM images of Cu films deposited on different substrates at 120 °C. The cycle count was 1000 for Si with native oxide, glass, Al_2O_3 , and Si-H, 2000 for TiN, and 4000 for Ru. The pulsing sequence was 1.0 s $\text{Cu}(\text{dmap})_2$, 1.0 s purge, 0.2 s TBH, and 1.0 s purge