

Fig.1: W etch amount as a function of cycle number using oxidizer and halogenating agent. Surface halogenation of W results higher W etch rate.

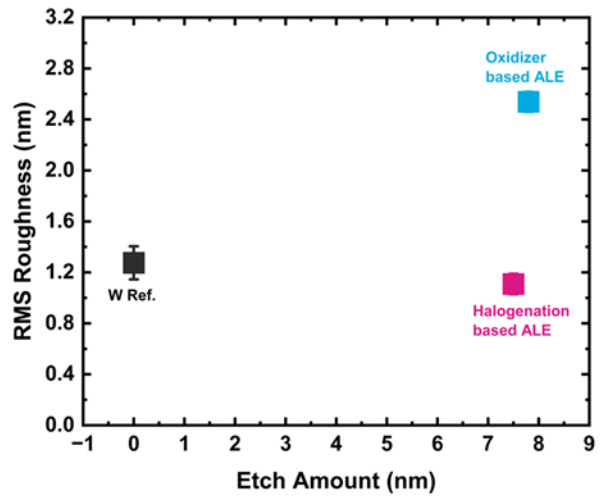


Fig.2: RMS roughness of post-etch W coupon following oxidizer based and halogenation based wet ALE process. Surface halogenation improves post-etch W roughness.

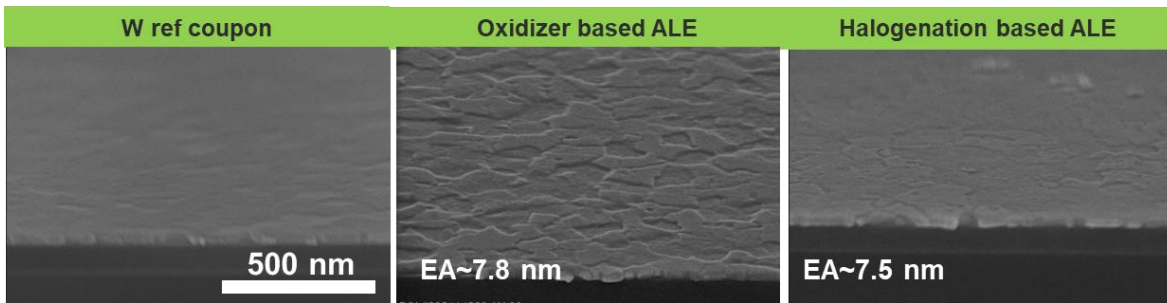


Fig.3: Comparing the SEM images of as-deposited W reference coupon with post-etch W coupons. SEM images show preserved surface smoothness on post-etch W coupon following halogenation wet ALE.