

Figure S1: Schematic illustration for Nanocomposites' preparation.

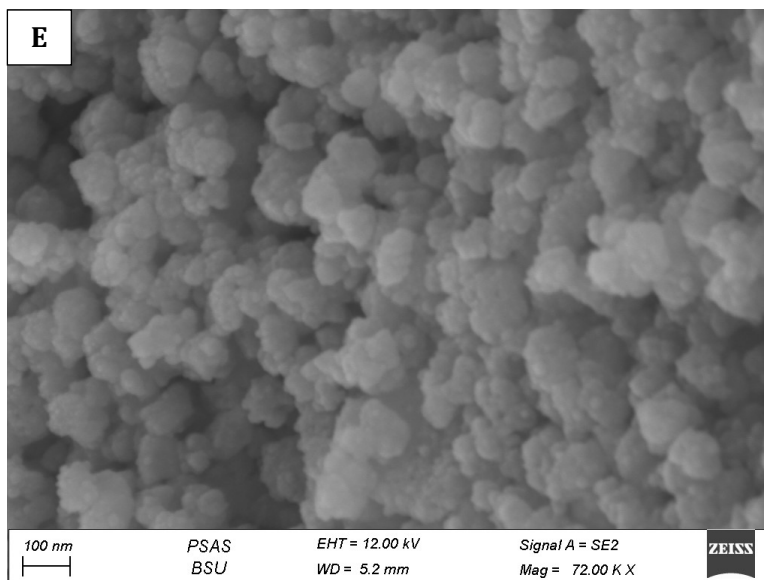
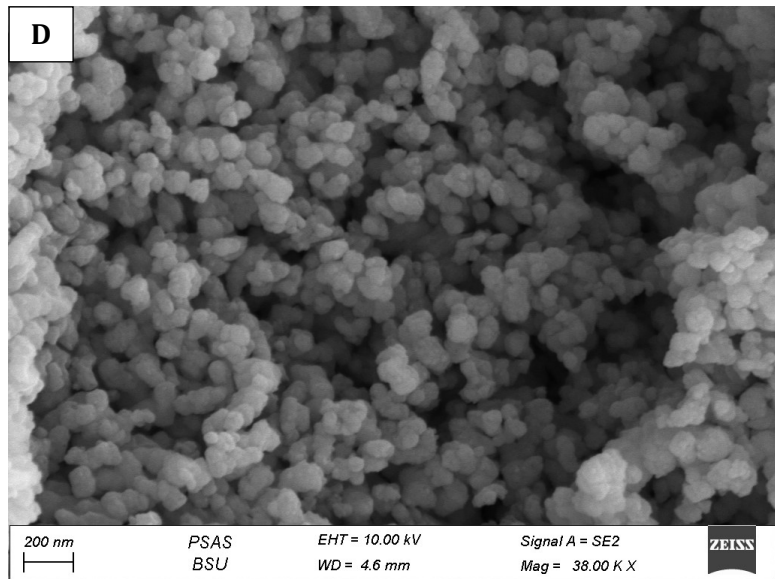
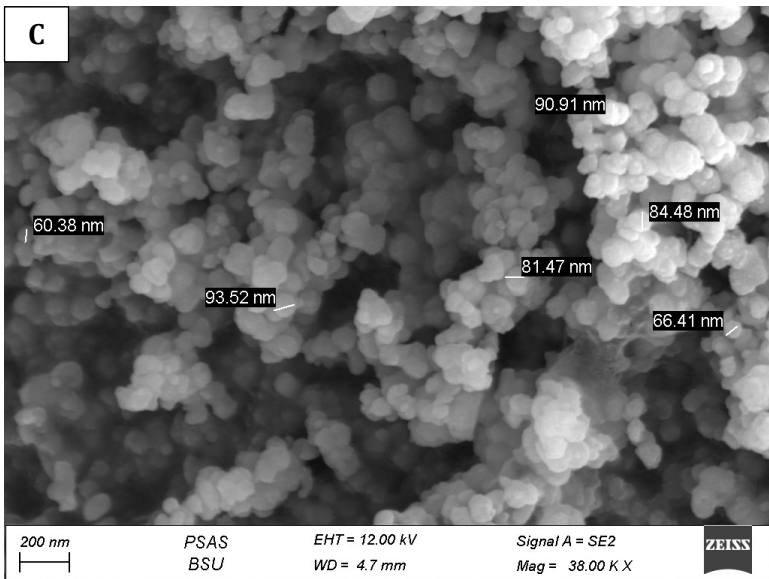
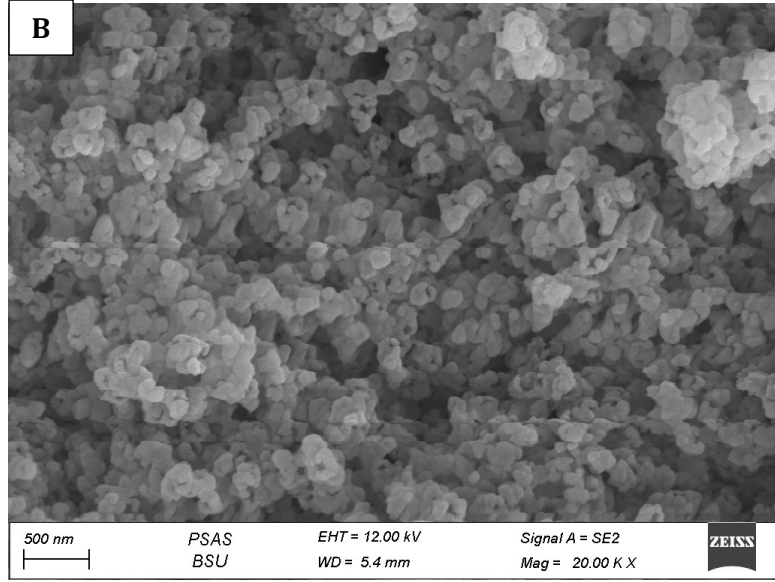
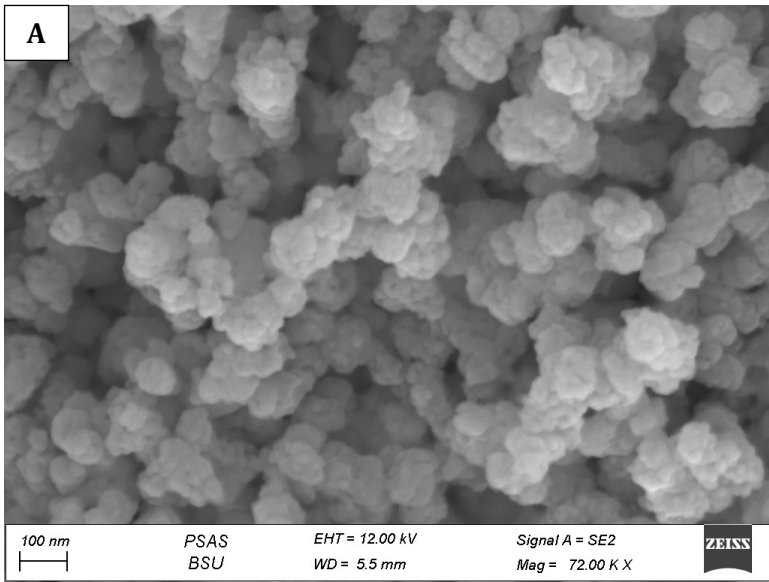


Figure S2: FESEM for samples W0.5 (A), W1 (B), W1.5 (C), W2 (D), W4 (E).

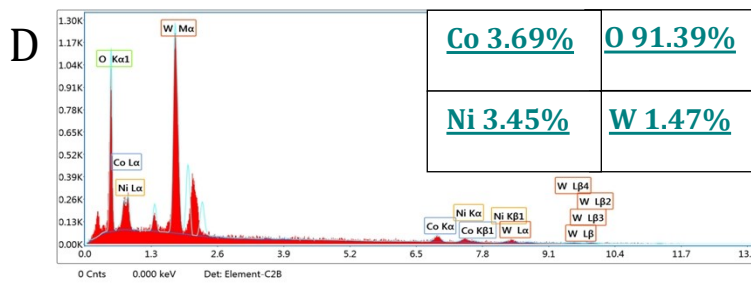
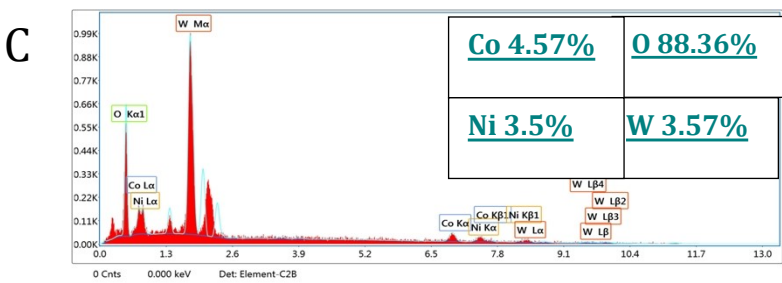
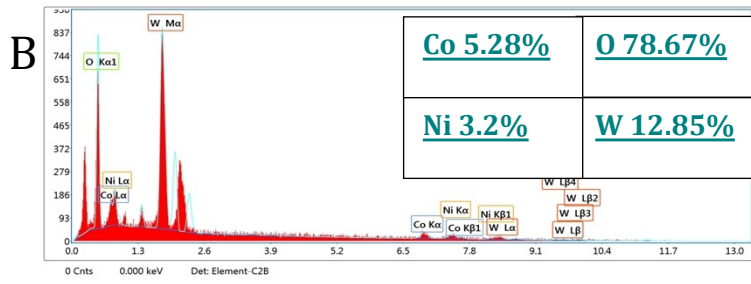
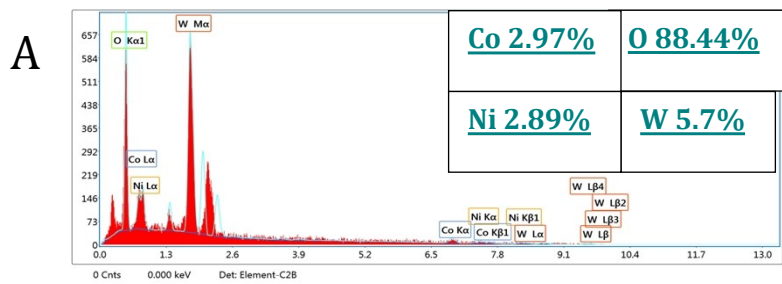


Figure S3: EDX for samples with atomic weight percentages, W2(a), W4(b), W1(c), W0.5(d)

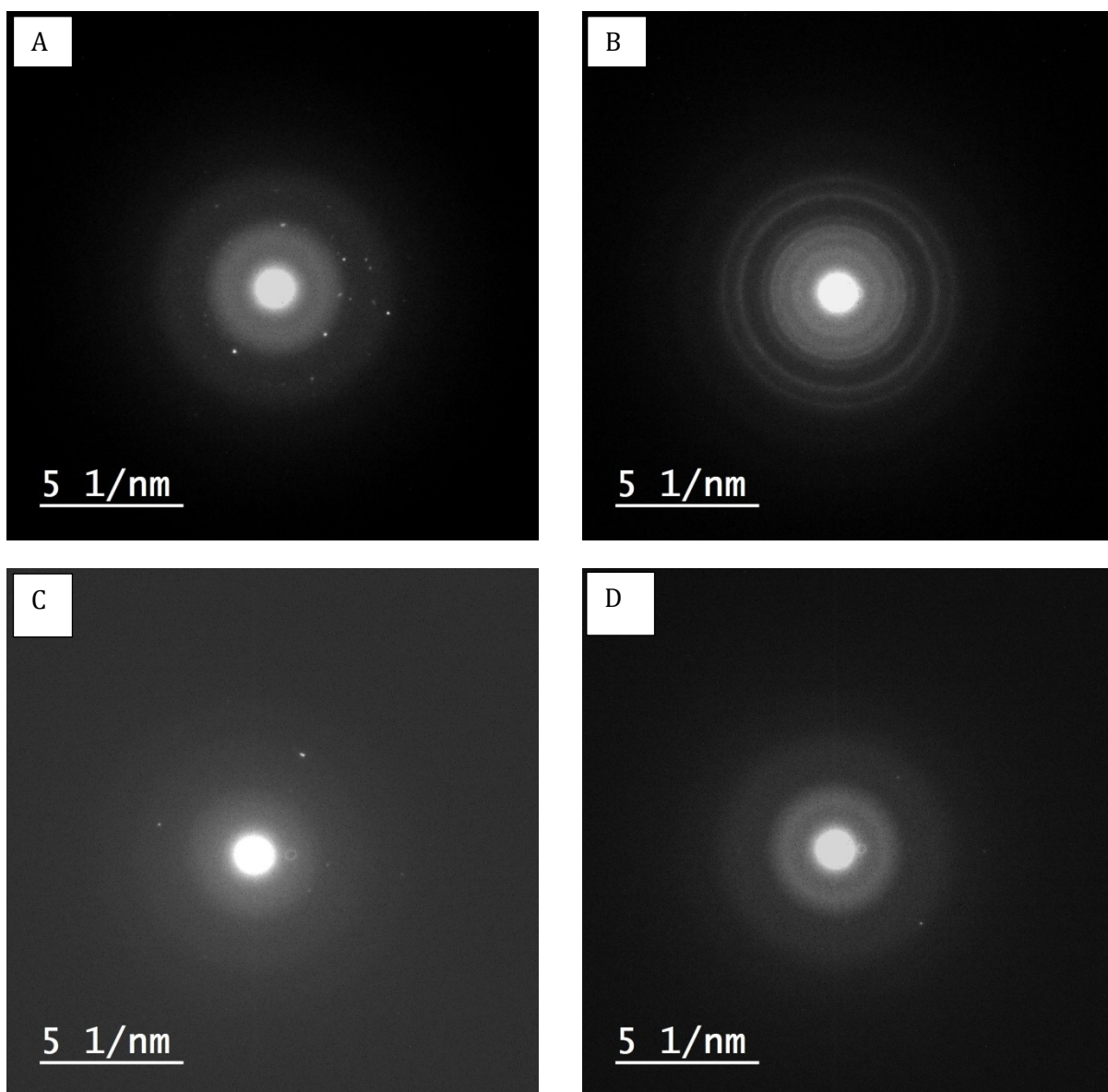


Figure S4: Diffraction pattern of samples under TEM W2 (A), W1 (B), W1.5 (C), W0.5 (D).

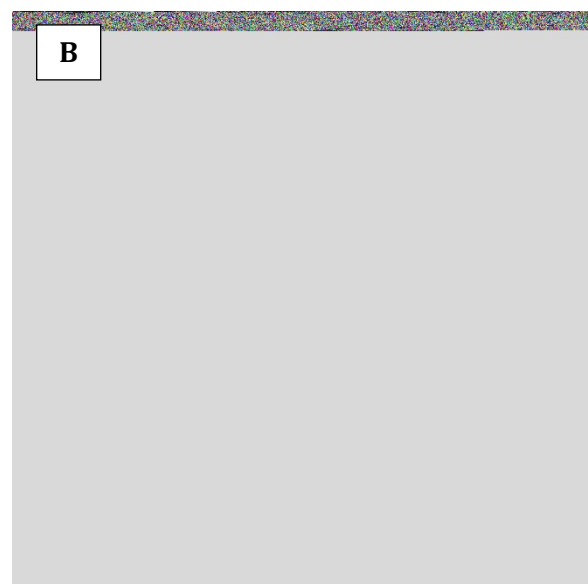
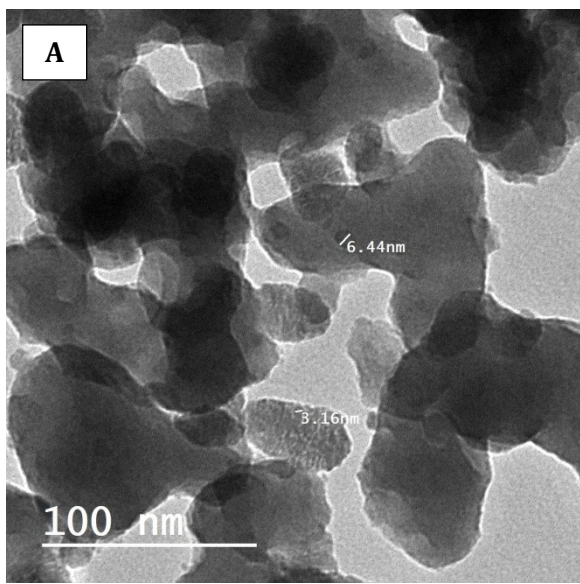


Figure S5: TEM image for W2 at 100nm magnification showing small round nanoparticles (A), showing platelet morphology (B).

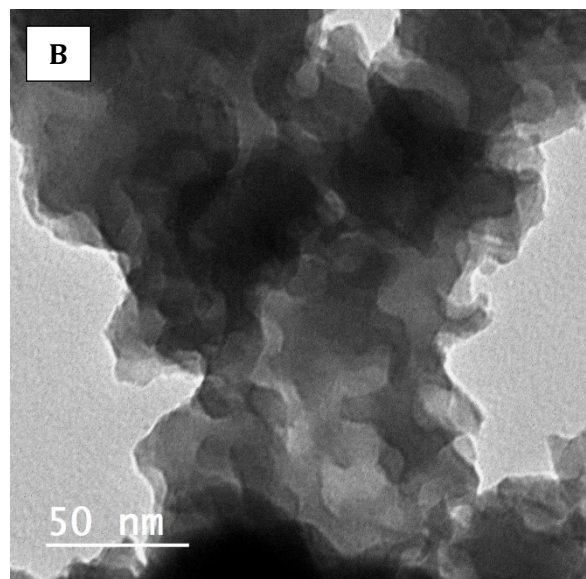
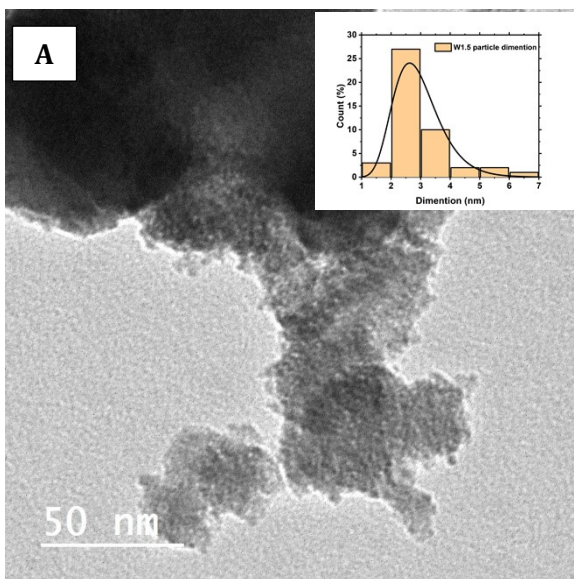


Figure S6: TEM images at 50 nm magnification for W1.5 showing small round particles (A), W0.5 at same magnification scale (B).

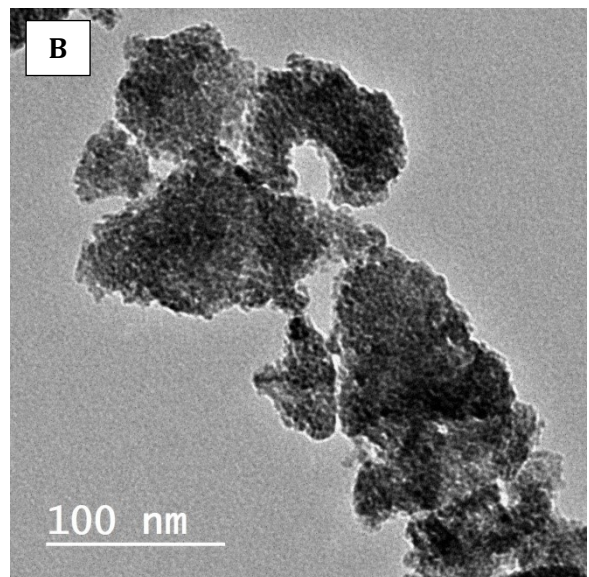
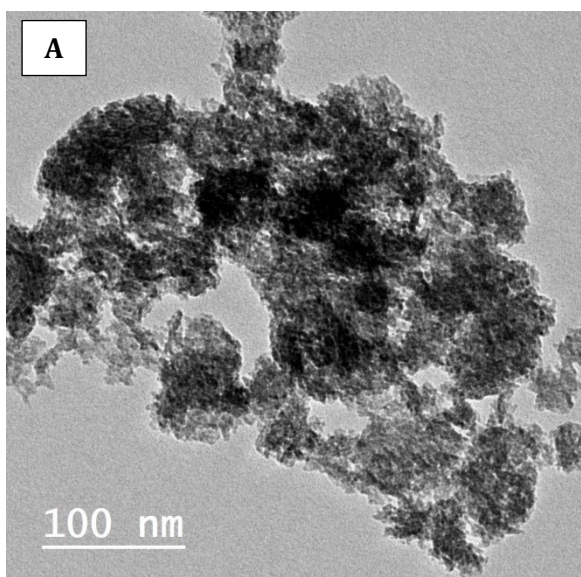


Figure S7: TEM images at 100 nm magnification for W1 (A), CW (B)

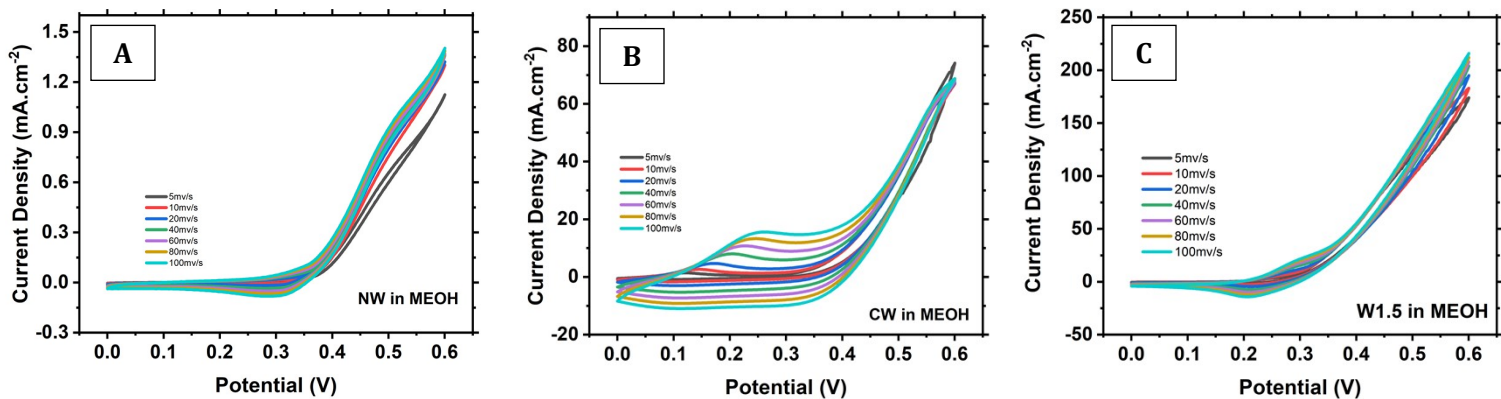


Figure S8: effect of scan rate in 1M KOH + 1M methanol for NW (A), CW (B), W1.5 (C).

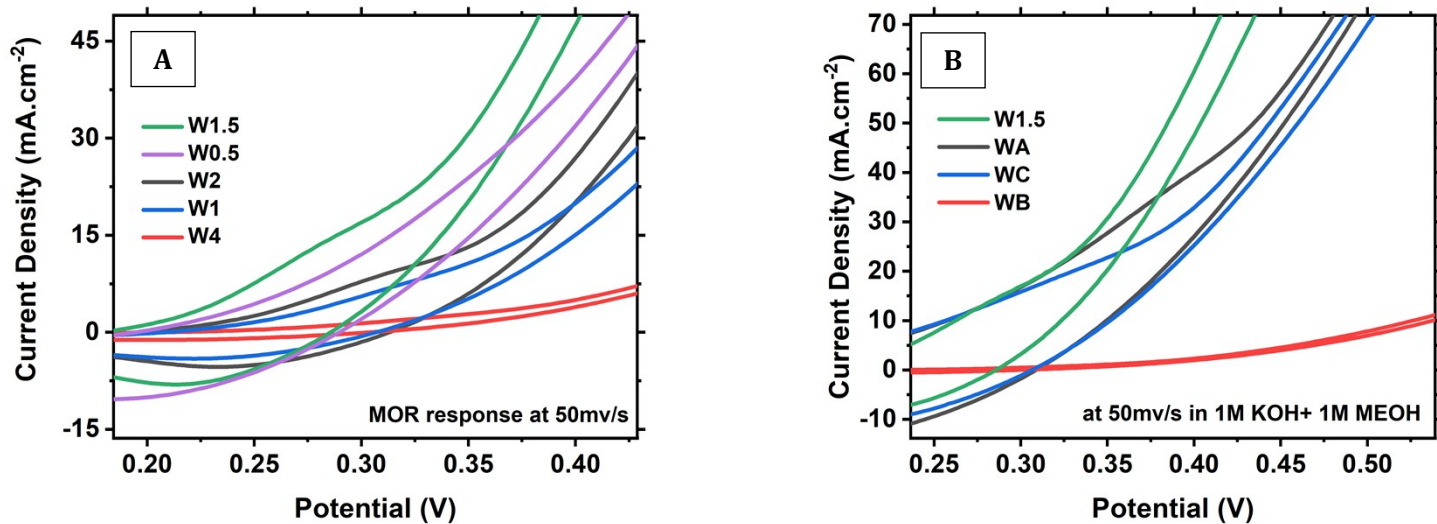


Figure S9: onset potential for W0.5, W1.5, W1, W2, W4 (A), W1.5, WA, WB, WC (B)

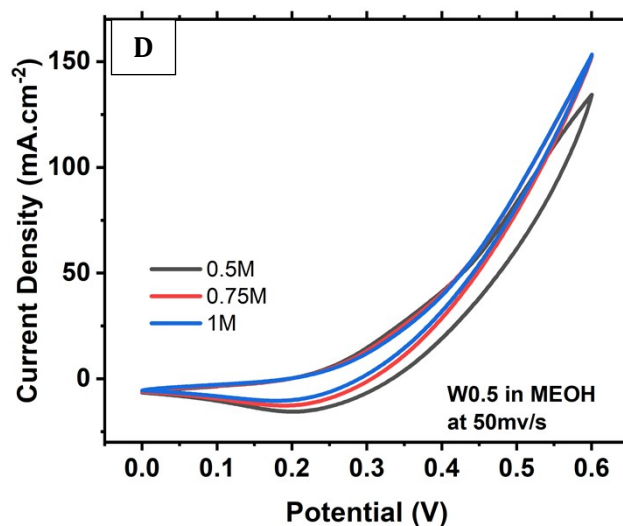
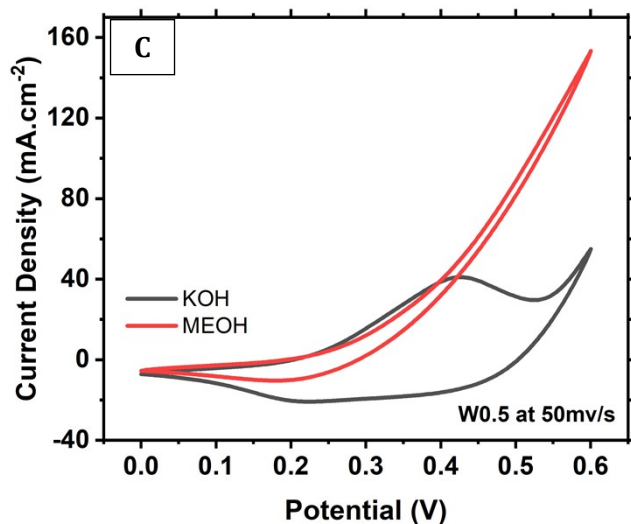
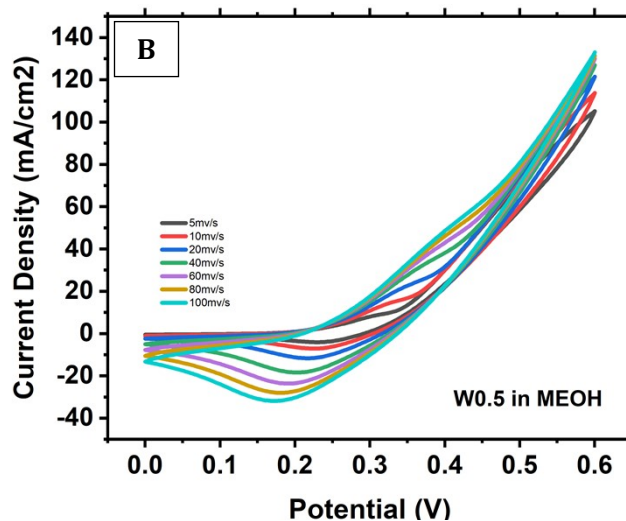
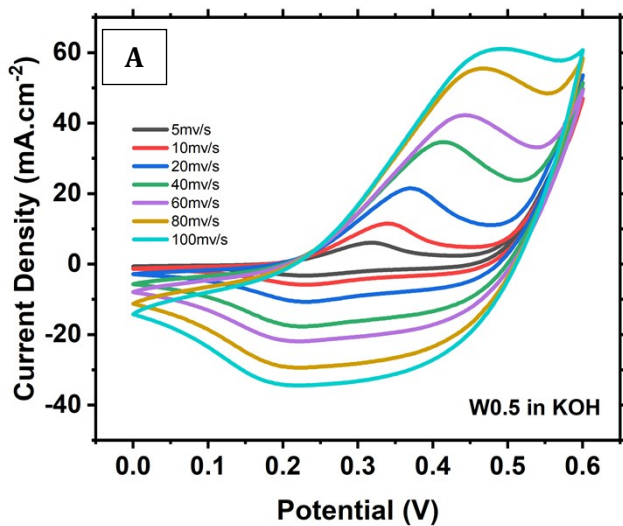


Figure S10: effect of scan rate on W0.5 in 1M KOH (A), Effect of scan rate on W0.5 in (1M KOH+1M Methanol) (B), W0.5 electrochemical response at 50mv/s (C), effect of different methanol concentration on W0.5 at scan rate 50mv/s (D).

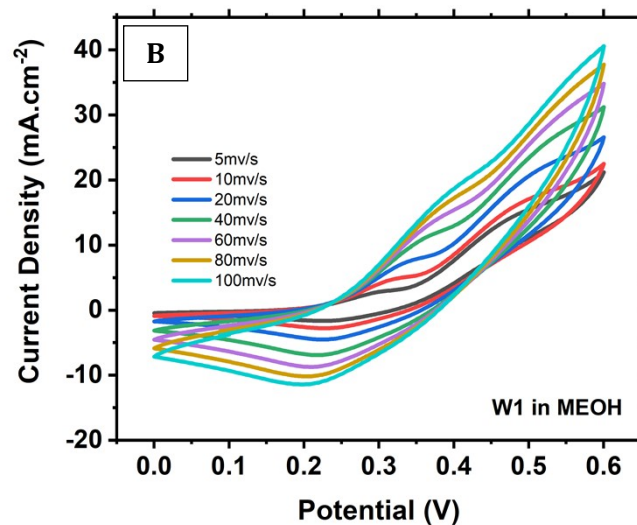
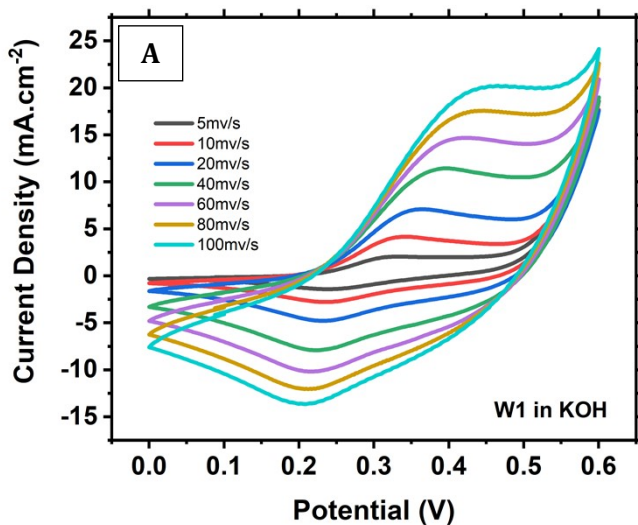


Figure S11: effect of scan rate on W1 in 1M KOH (A), Effect of scan rate on W1 in (1M KOH+1M Methanol) (B).

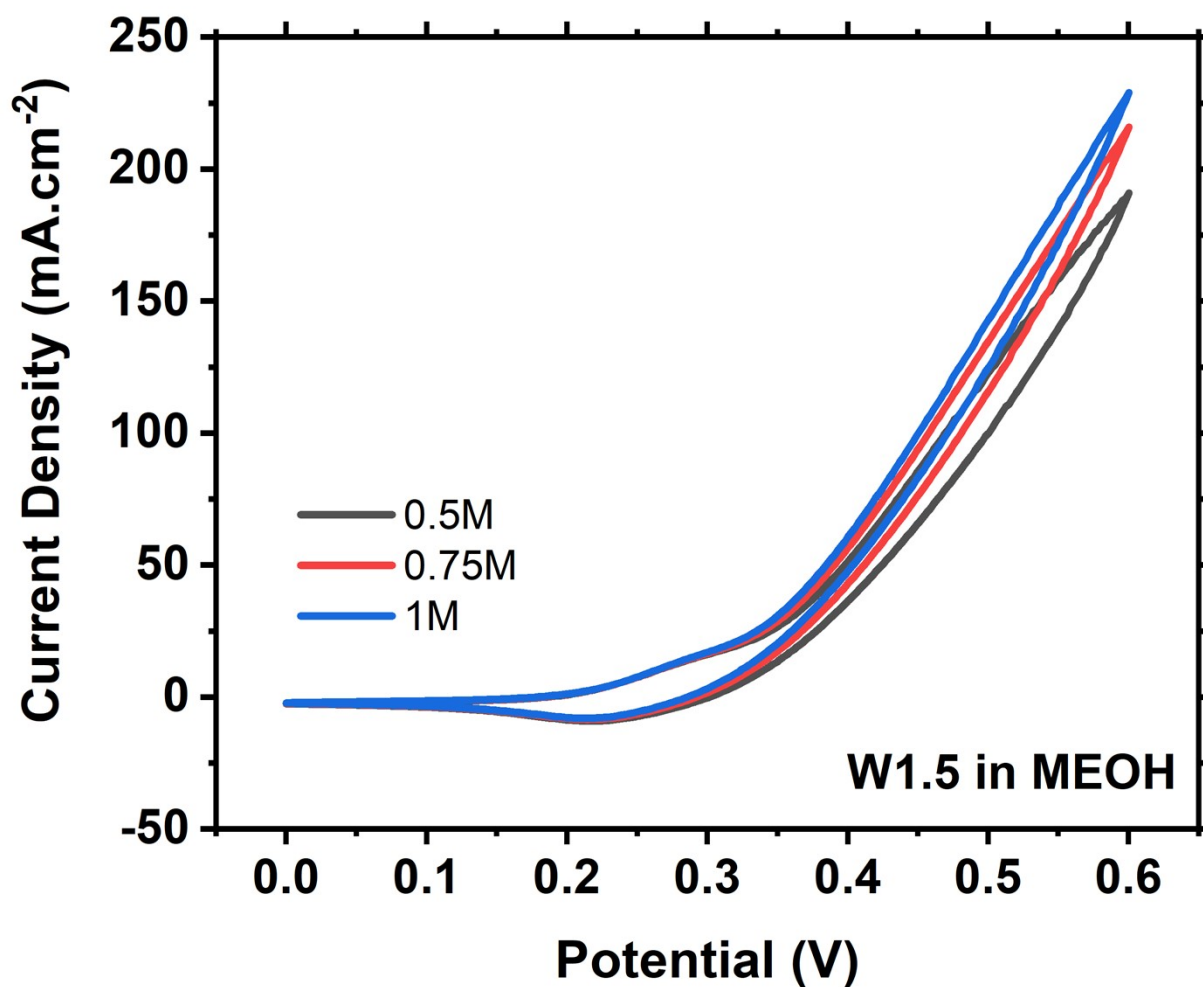


Figure S12: electrochemical response of W1.5 at different methanol concentrations at 50mV/s.

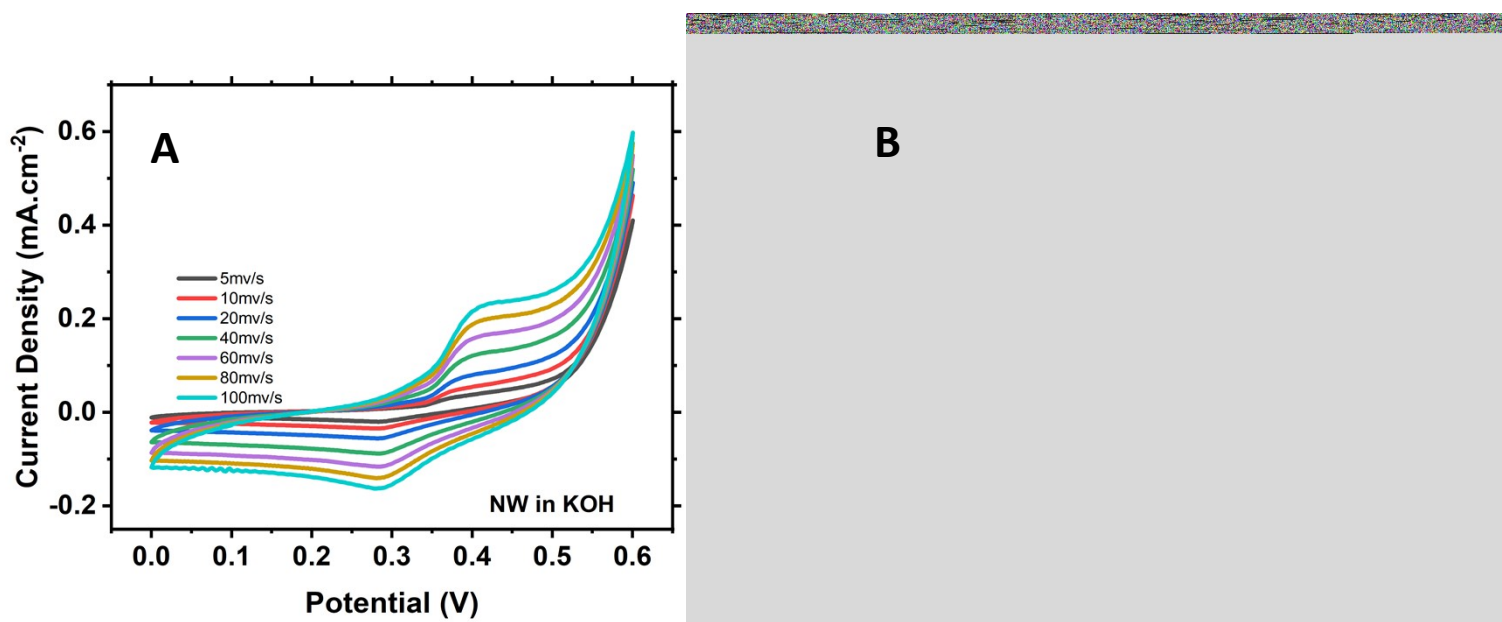


Figure S13: Effect of scan rate on NW at 1M KOH (A) and in 1M KOH+ 1M MEOH (B)

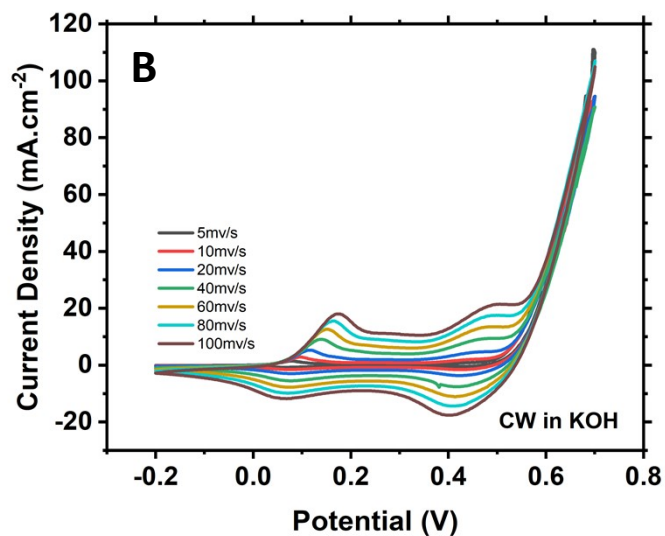
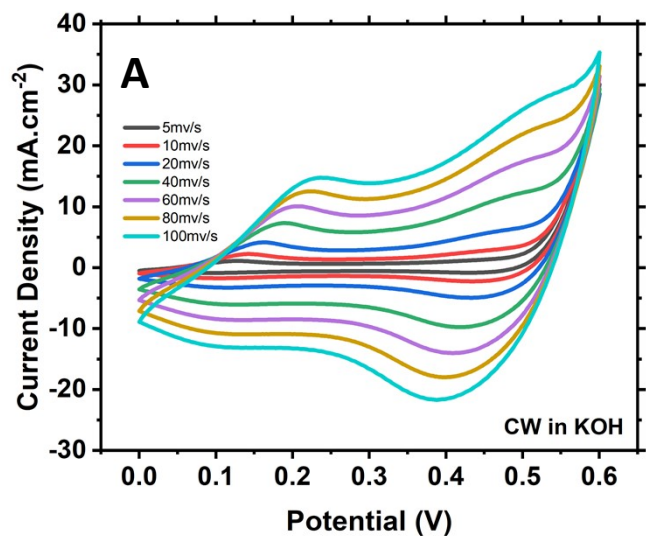


Figure S14: Effect of scan rate on CW at 1M KOH (A) and in 1M KOH+ 1M MEOH (B)

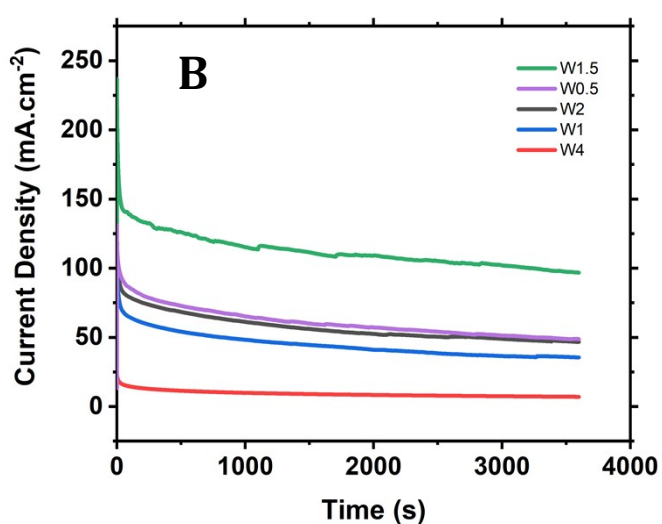
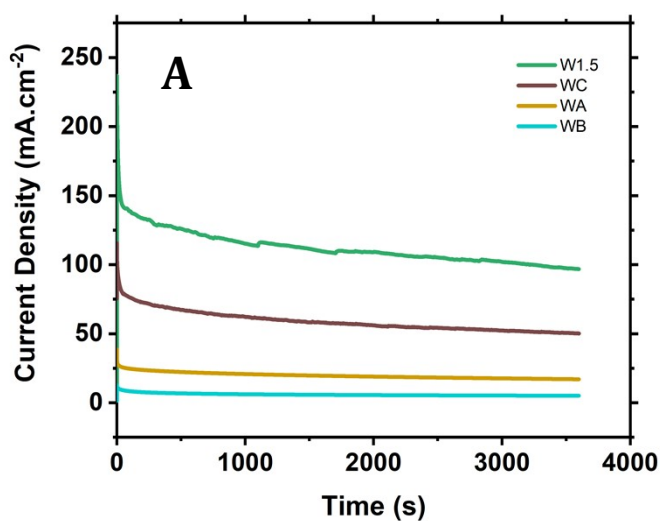


Figure S15: View of Stability measurements for samples at 0.6V for 3600s.(A): W1.5, WA, WB, WC. (B): W1.5, W0.5, W2, W1, W4.

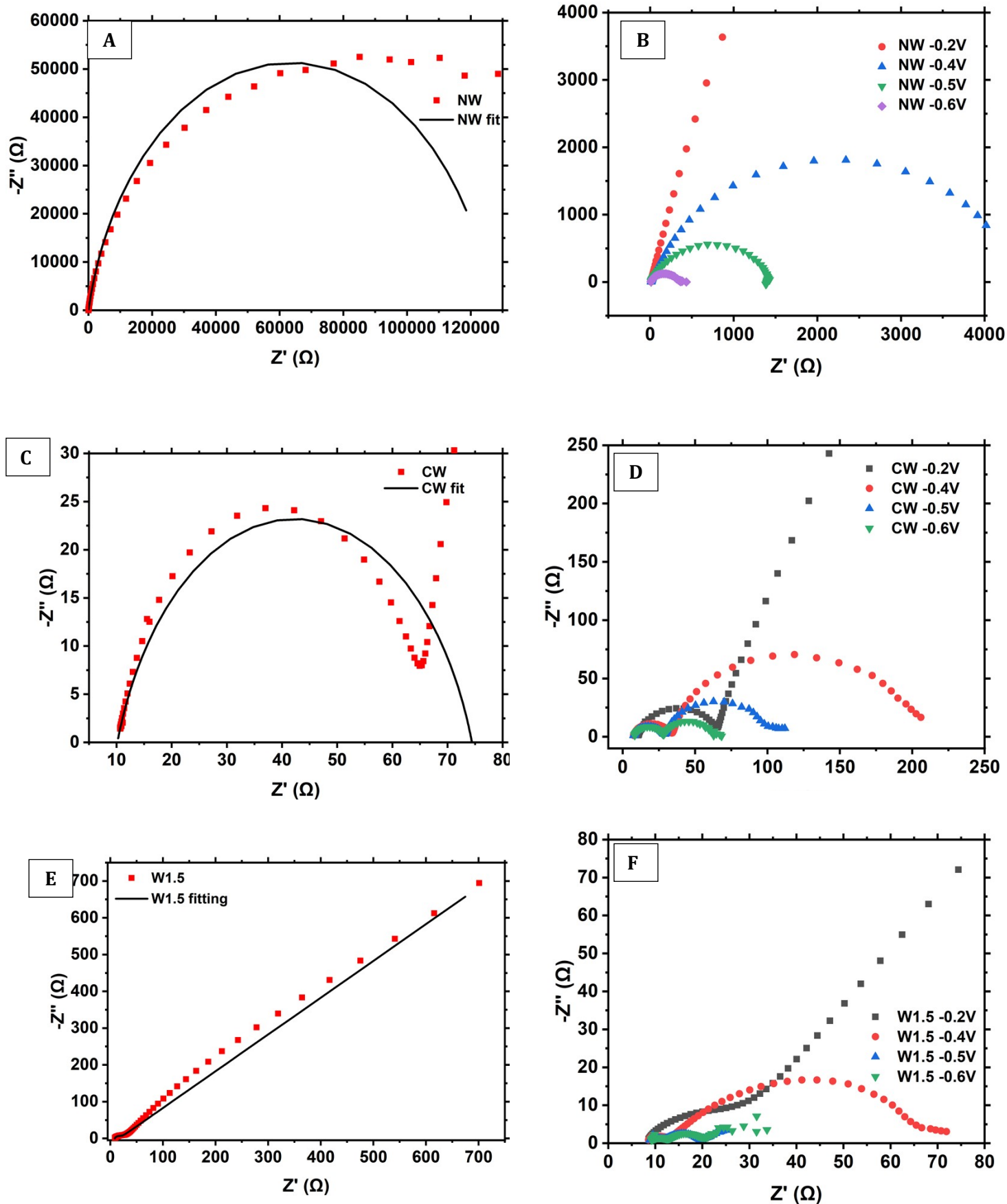


Figure S16: Semicircle fitting of EIS at 0.2V for CW (A), NW (C) and W1.5 (E). Zoom view at different applied voltages for CW (B), NW (D) and W1.5 (F).

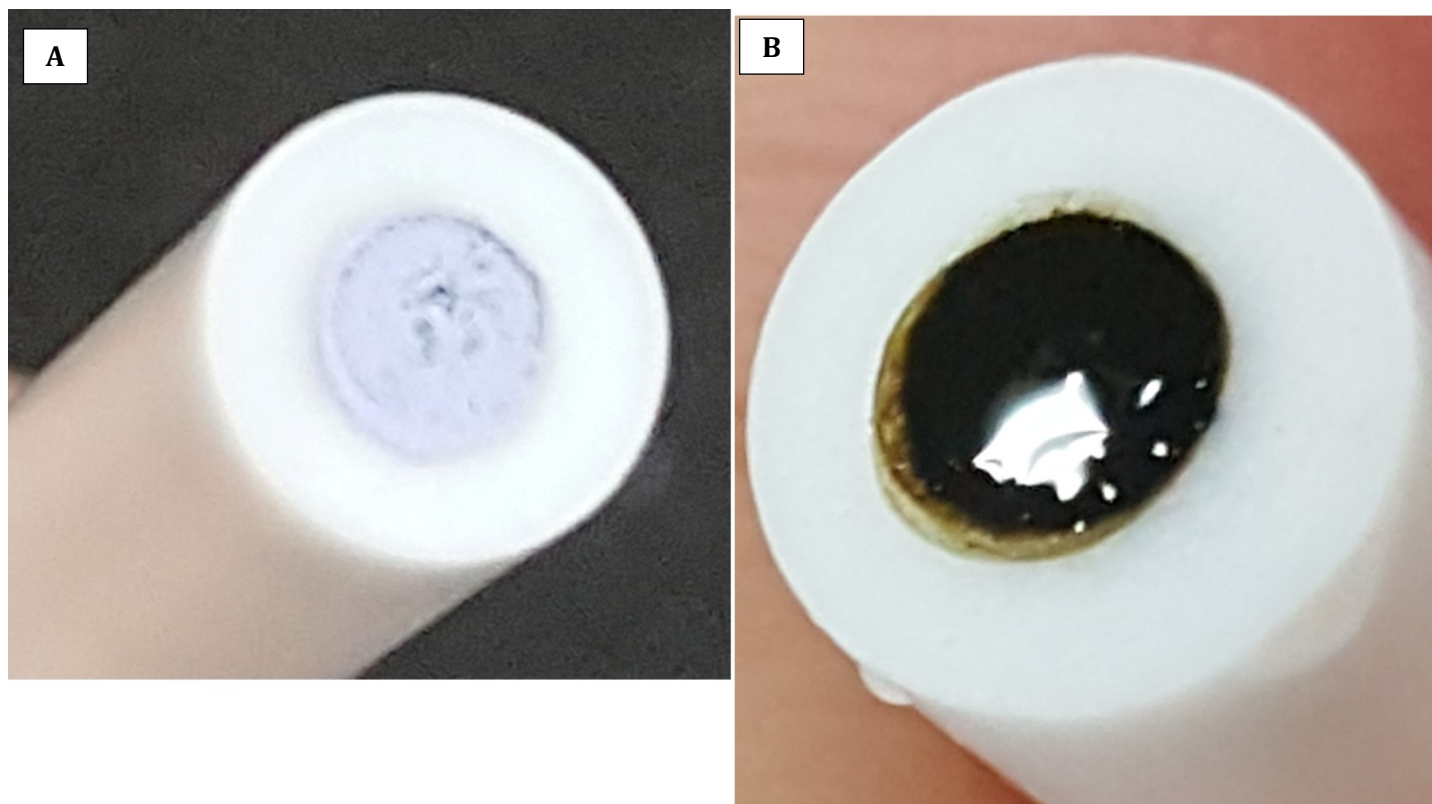


Figure S17: W1.5 sample before cyclic voltammetry (A), After cyclic voltammetry (B).
(white spot is light reflection)

Table S1: Relative Standard Deviation data calculations for samples W0.5,W1,W1.5,W2,CW and NW.

Sample	Data point 1	Data point 2	Standard deviation	RSD %
W0.5	130	138	4	2.99
W1	88	72	3	3.53
W1.5	229	217	6	2.69
W2	140	133	3.5	2.56
CW	110	98	6	5.77
NW	1.42	1.36	0.03	2.16