Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Materials

Nanostructured conducting molecularly imprinted polypyrrole based quartz crystal microbalance sensor for naproxen determination and its electrochemical impedance study

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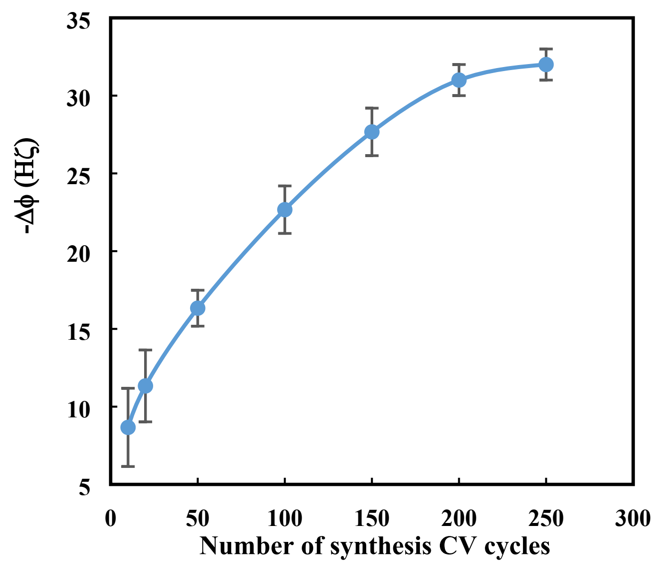


Fig. S1 The frequency shift of sensors with different film thicknesses to a known concentration of NAP. 200 coating cycles almost give the best film thickness with maximum response.

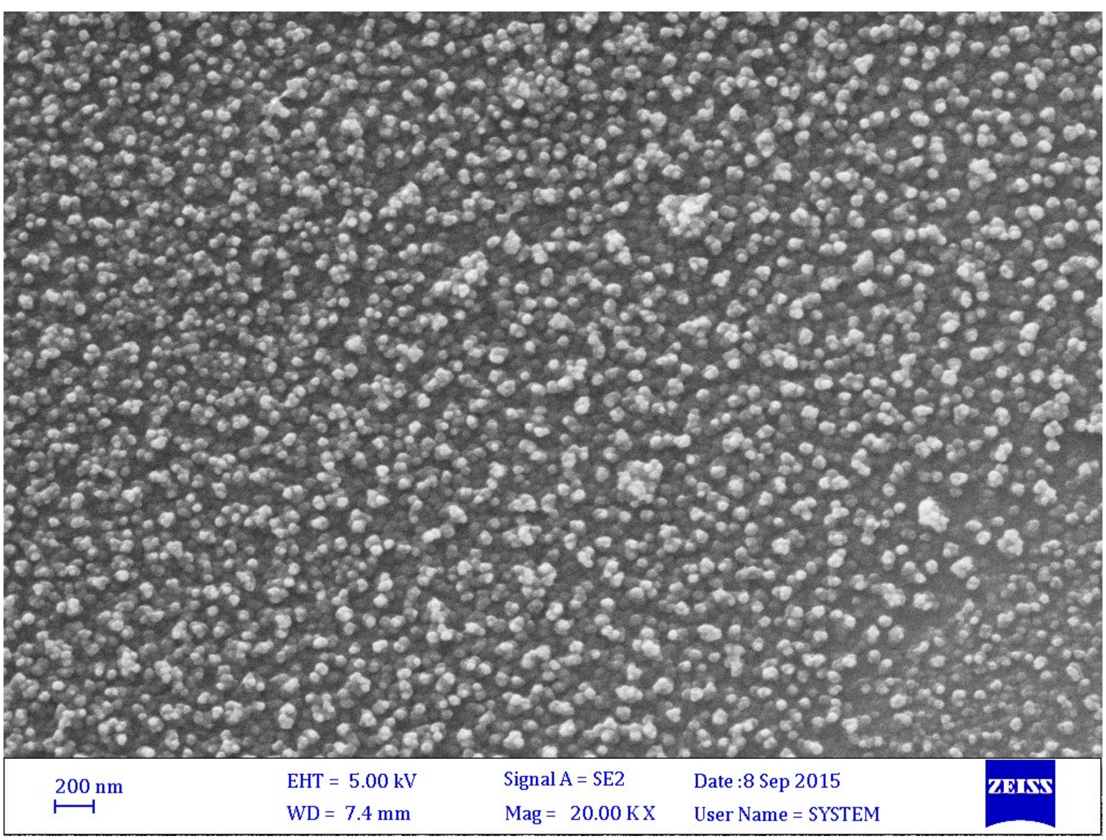


Fig. S2 a sample of lower magnification FE-SEM images of prepared CMIP film.

A

B

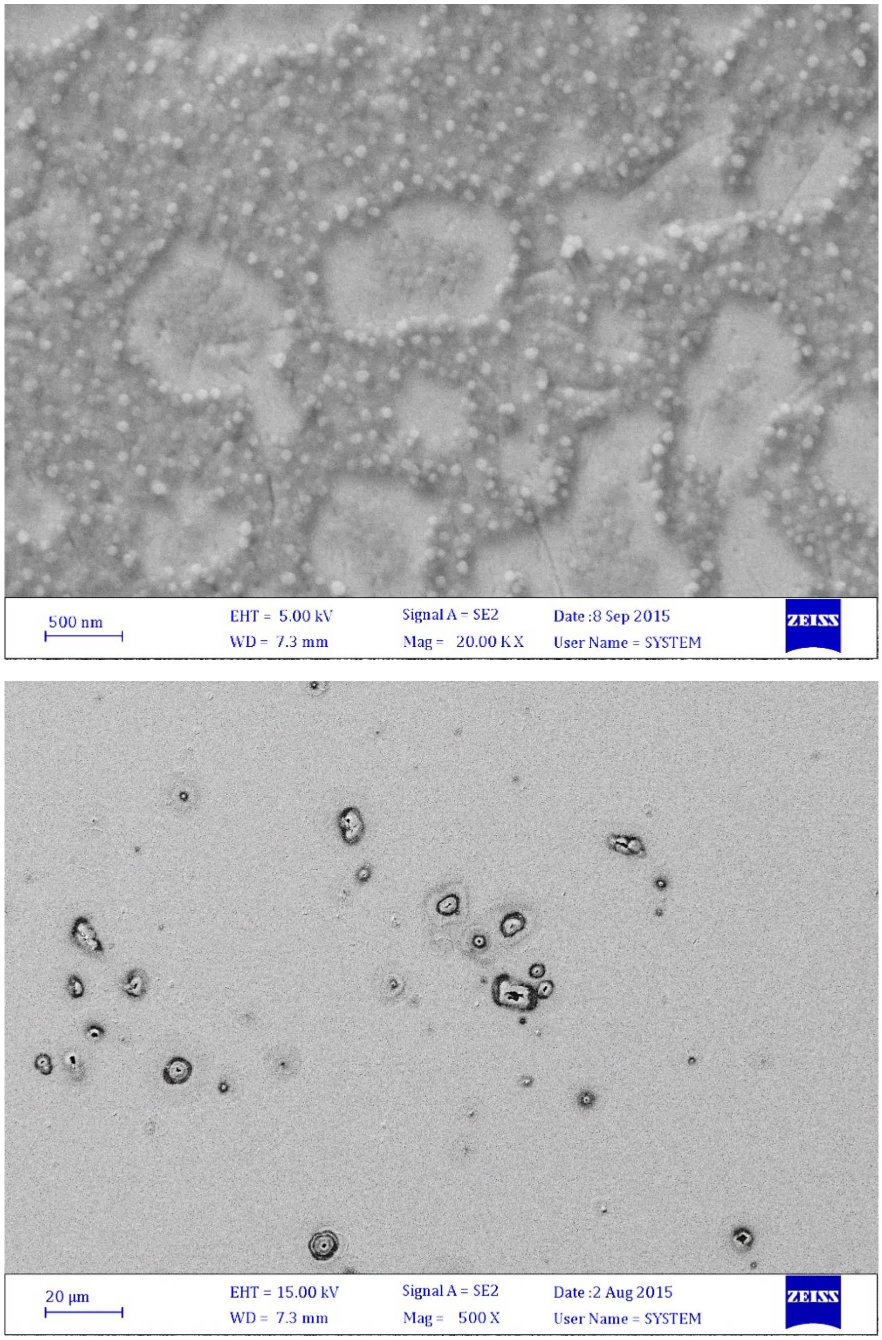


Fig. S3 FE-SEM images of prepared CMIP film deposited on QCM electrode after 20 cycles of overoxidation in area with appearance of pinholes (A) and the appearance of larger pinholes after 30 cycles of overoxidation (B).

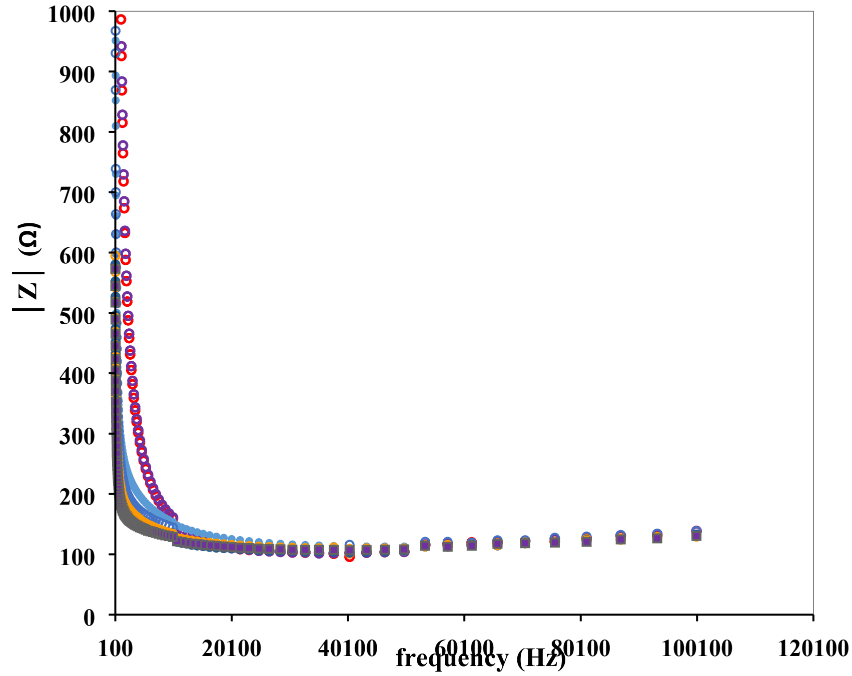


Fig. S4 The Bode plot (|Z| versus log f) of impedance data for the CMIP film as prepared (CMIP), after 10 (OCMIP1), 20 (OCMIP2) and 30 (OCMIP3) cycles of overoxidation and after potential induced uptake and release of NAP for overoxidized film at +0.3 and -0.3 V *vs*. Ag/AgCl respectively measured at 0.0 V vs. Ag/AgCl in 50 mM phosphate busser (pH=7.4).

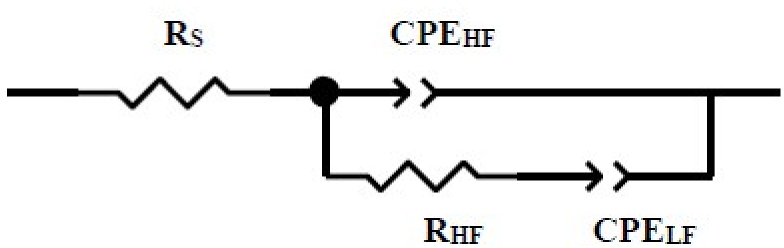


Fig. S5 Equivalent circuit used for modelling the impedance data.

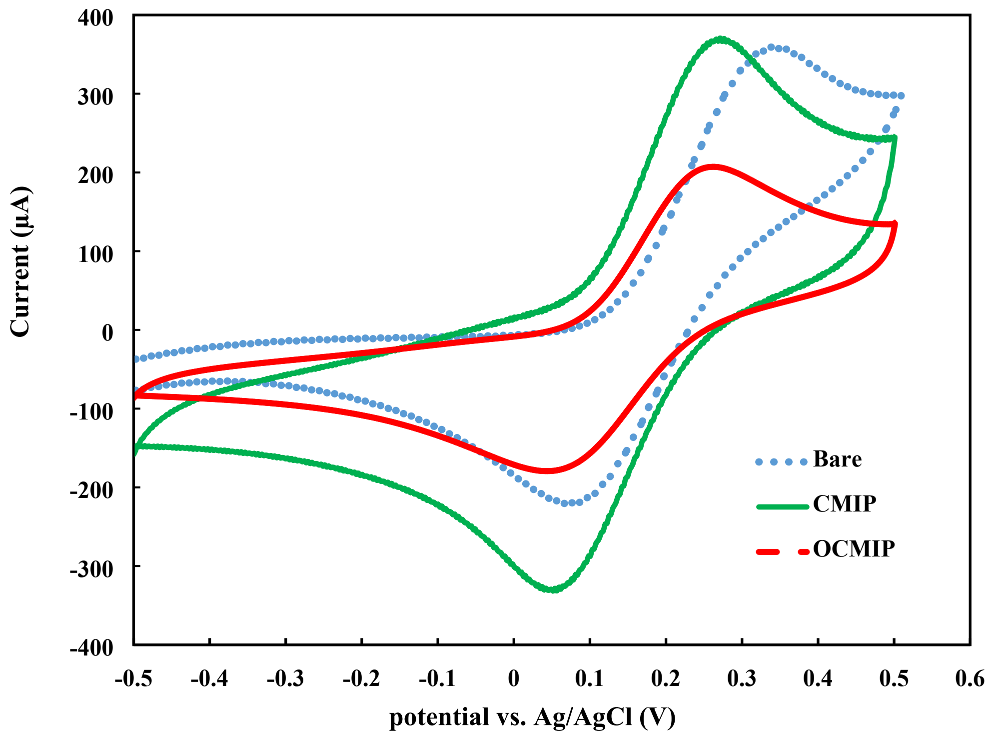


Fig. S6 Cyclic voltammograms of the bare gold electrode, and the same electrode modified with as prepared CMIP and OCMIP with optimum overoxidation in 50 mM $Fe(CN)_6^{3-}$ and 0.1 M KCl.

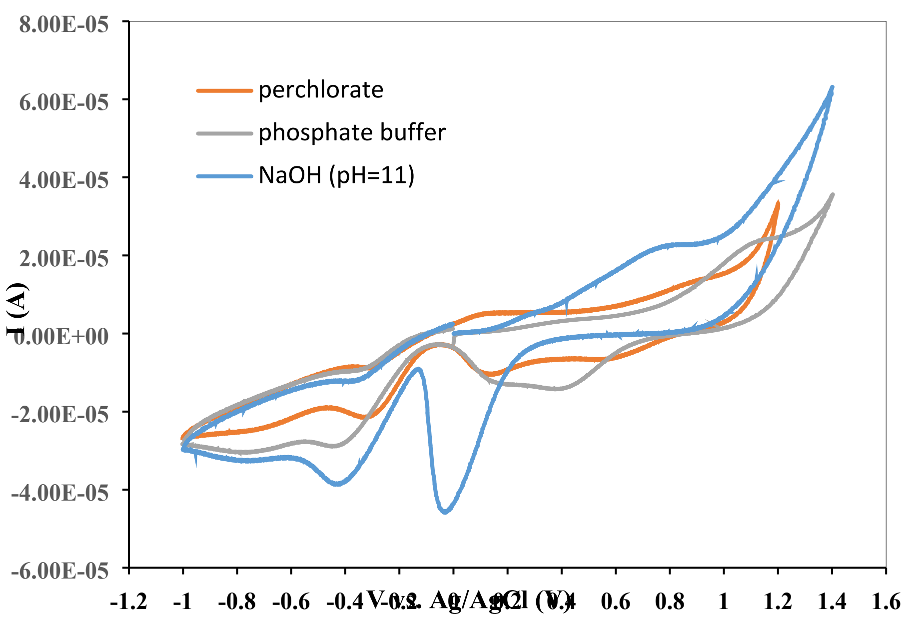
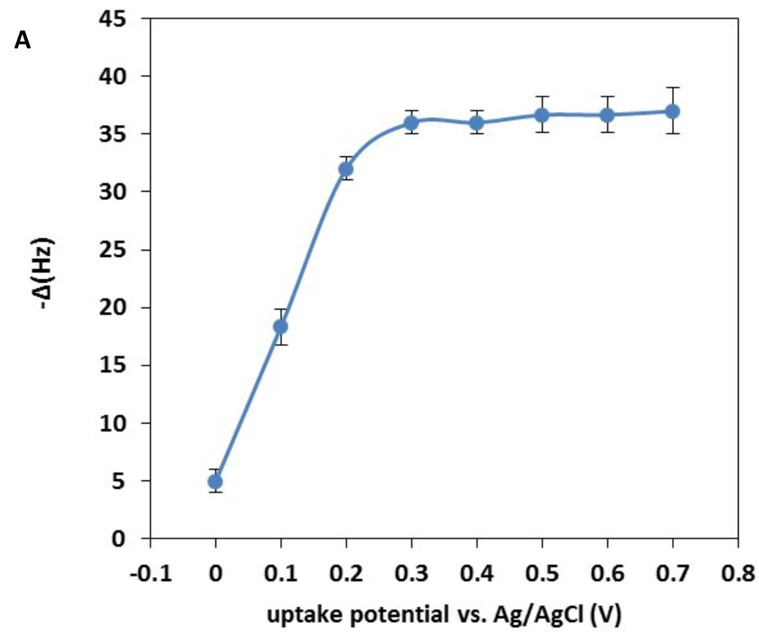


Fig. S7 The overoxidation peaks of CMIP film in electrolyte solutions including the perchlorate 0.01M (pH=6), phosphate 0.01M (pH=7.4) and NaOH (pH=11)



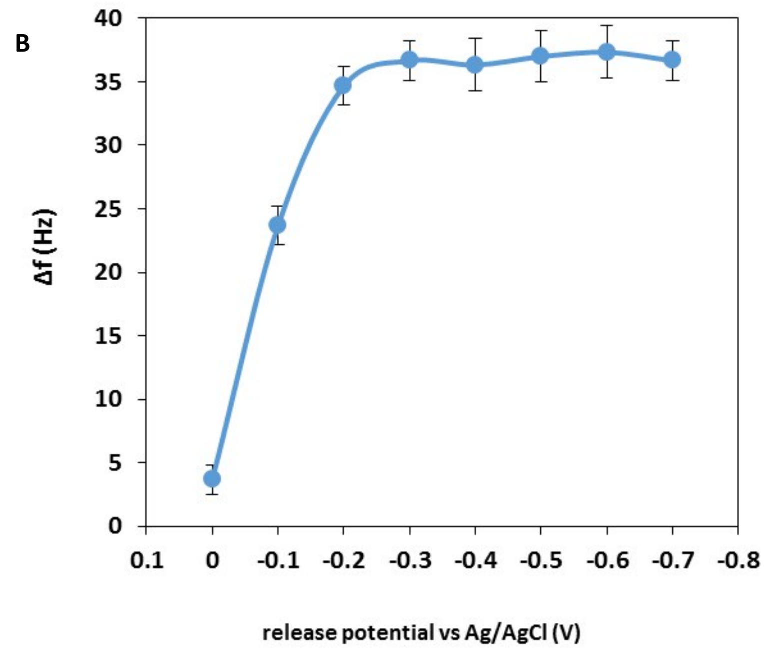


Fig. S8 Effect of applied potential on uptake (A) and release (B) of NAP from overoxidized CMIP film, uptake from a 8µmol L^{-1} NAP aqueous solution (B), t_{uptake} = 300 s (A, B), E_{uptake} = 0.3 V(B), $t_{release}$ = 400 s (B), release solution; 0.01 M ClO_4^-.