Supporting Information

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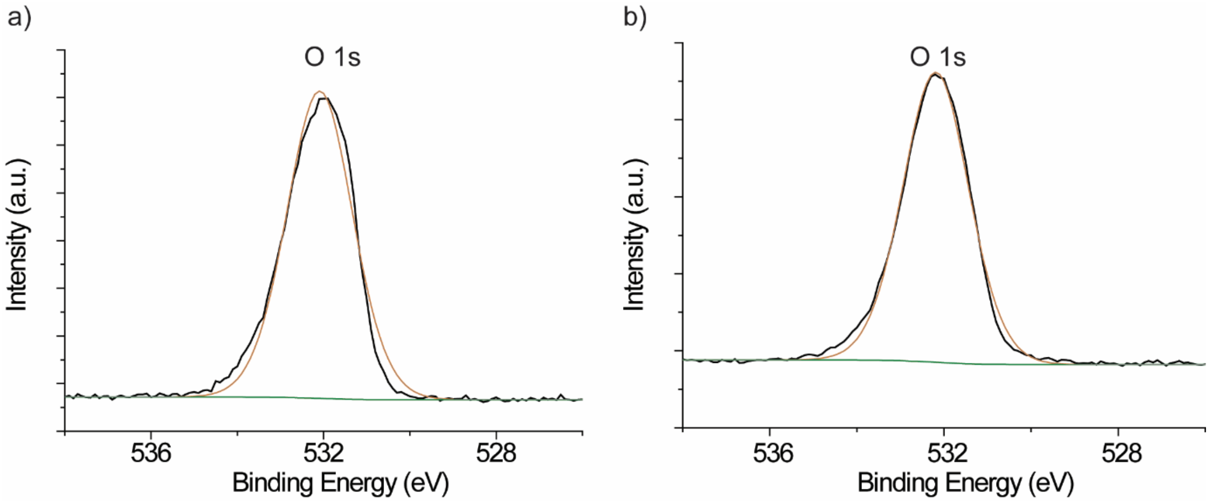

Figure S1. XPS high resolution O 1s spectra of SAM **S–1**, which was etched by a) NH_4F, b) KF.

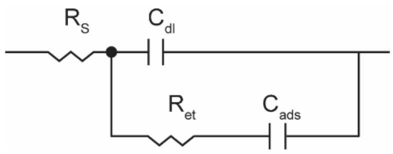

Figure S2. The Randles circuit used to fit the EIS data. The k_{et} is calculated according to the following equations:

$$(C_{ads})_{eff} = Q^{1/\alpha} R_e^{(1-\alpha)/\alpha}$$

In the above equations, where R_e is the global Ohmic resistance and Q and α represent global properties, Q represents the differential capacity of the interface in the case where $\alpha = 1$ and the rate constant is determined by the following equation:

$$k_{et} = \frac{1}{2R_{et}(C_{ads})_{eff}}$$

Where k_{et} is the rate constant, R_{et} is the electron transfer resistance, and $(C_{ads})_{eff}$ is the effective pseudocapacitance.

Table S1. The value of best fits to the original EIS data presented in Figure 5a-b. The EIS data were interpreted by curve fitting the data to Randles circuit.

Surface Type	**R_{sol} (Ω)**	**C_{dl} (F $s^{-\alpha}$)**	**α (C_{dl})**	**R_{et} (Ω)**	**C_{ads} (F $s^{-\alpha}$)**	**α (C_{ads})**	**$(C_{ads})_{eff}$ (F)**	**k_{et} (s^{-1})**
NH_4F	5.83 ± 0.19	(1.18 ± 0.13)×10^{-6}	0.91	101.6 ± 1.56	(2.88 ± 0.12)×10^{-5}	0.92	7.76 × 10^{-6}	634.18 ± 9.59
KF	8.15 ± 0.10	(9.20 ± 0.26)×10^{-7}	0.94	3619 ± 153.33	(9.76 ± 0.71)×10^{-7}	0.96	3.90 × 10^{-7}	354.26 ± 14.4