Electronic Supplementary Material (ESI) for Dalton Transactions.


# Enhancing oxygen evolution reaction of cobalt hydroxide by fabricating nanocomposites with fluorine doped graphene oxide

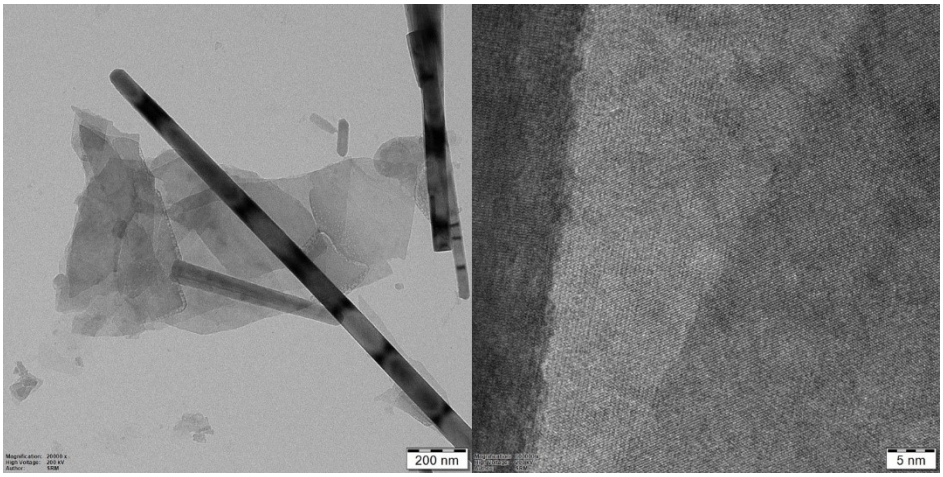


Figure S1. HR-TEM image and lattice fringe pattern of $Co(OH)_2$.

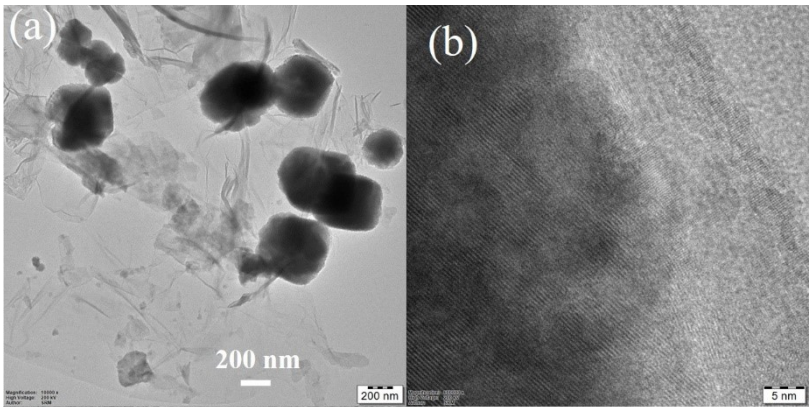


Figure S2. HR-TEM image and lattice fringe pattern of N, F-$Co(OH)_2$/GO.

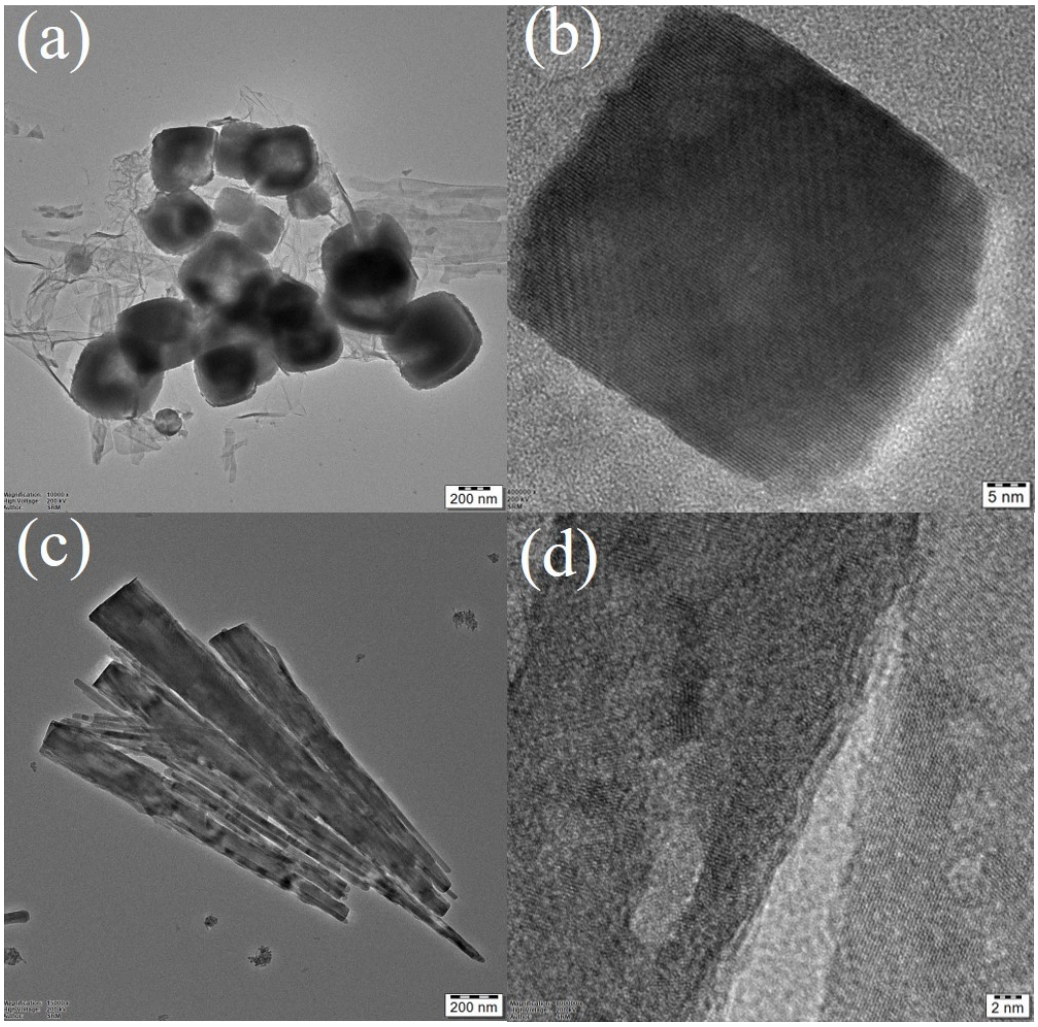


Figure S3. HR-TEM image and lattice fringe pattern of (a,b) N, F-$Co(OH)_2$/GO-6h and (c,d) $Co(OH)_2$/GO.

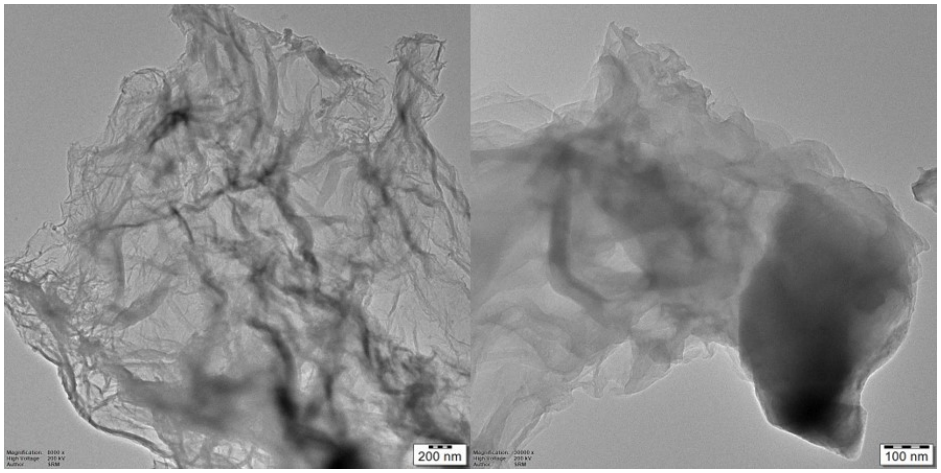


Figure S4. HR-TEM image $Co(OH)_2$/GO prepared without urea.

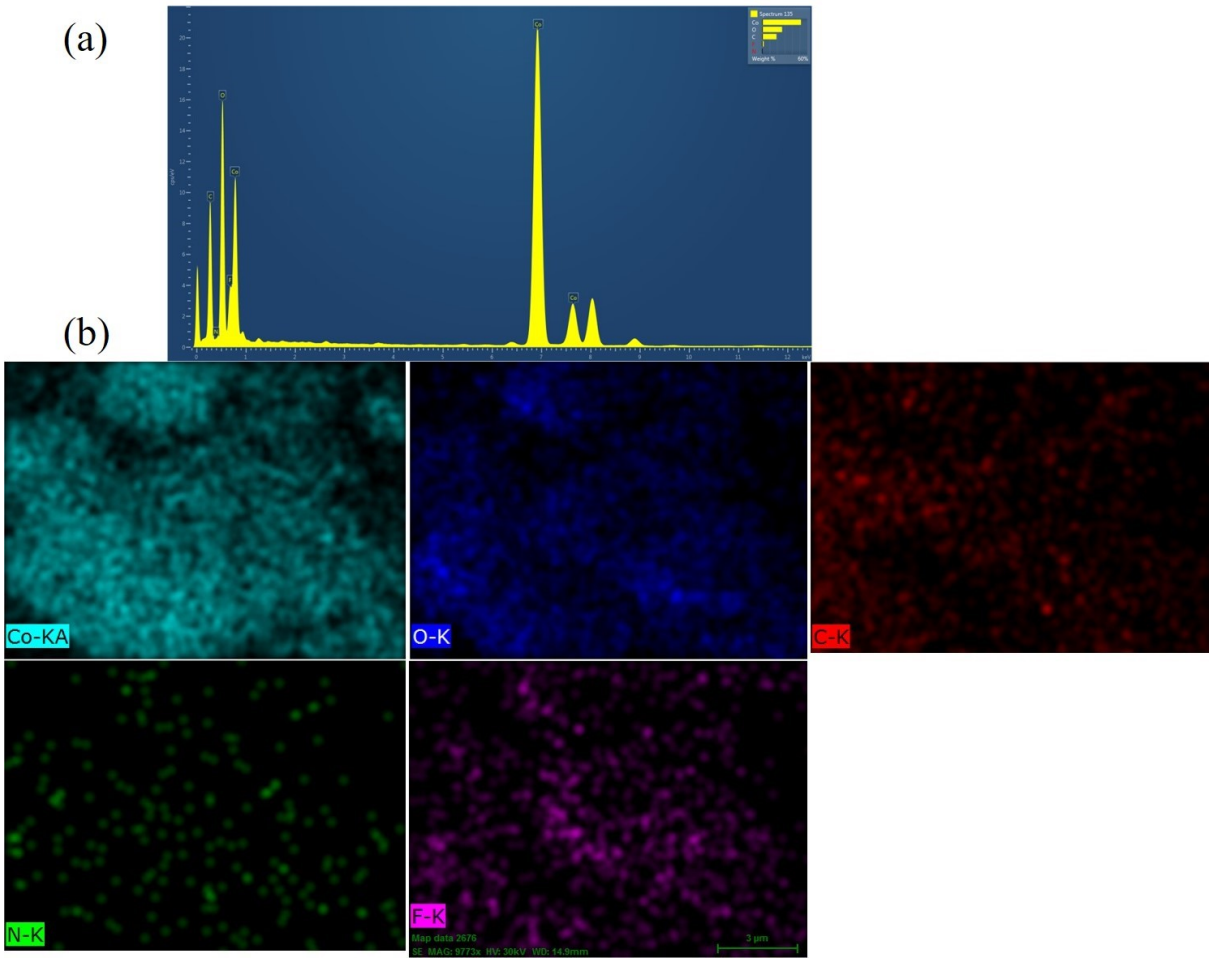


Figure S5. (a) EDX graph and (b) elemental mapping of N, F-$Co(OH)_2$/GO.

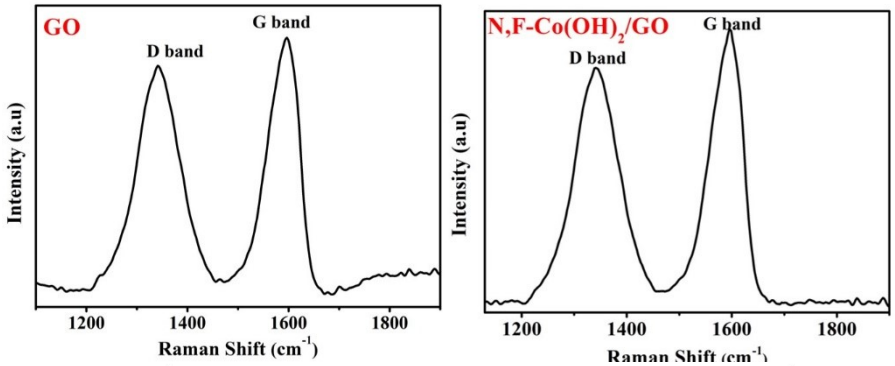


Figure S6. Raman spectra of GO and N, F-$Co(OH)_2$/GO.

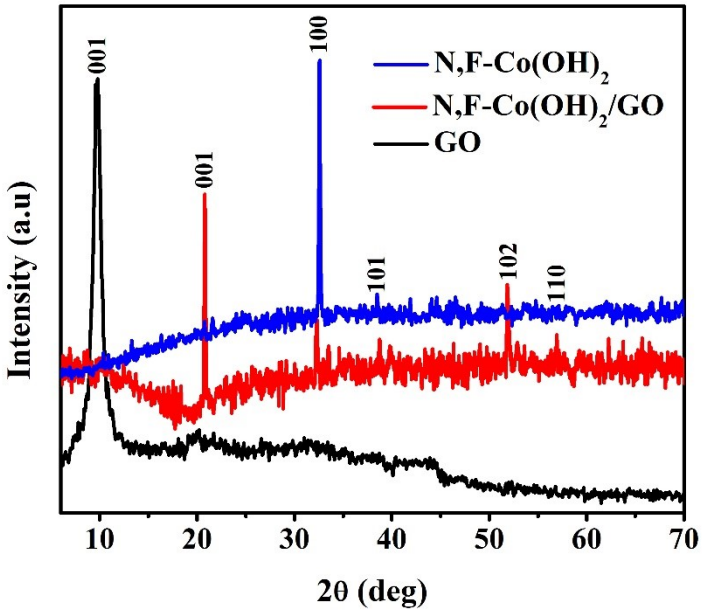

Figure S7. PXRD pattern of GO, N,F-$Co(OH)_2$ and N, F-$Co(OH)_2$/GO.

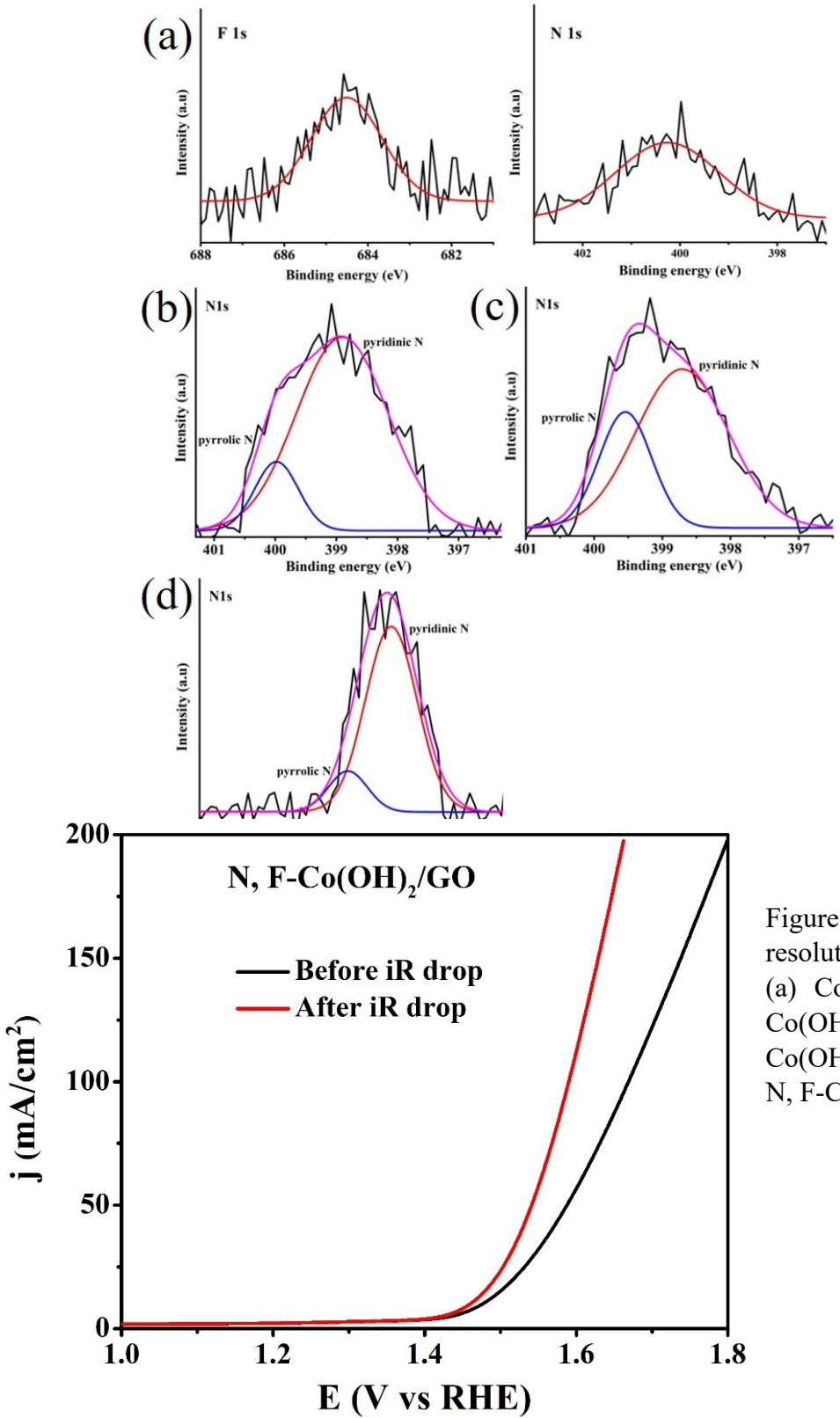


Figure S8. The high resolution XPS spectra of (a) $Co(OH)_2$, (b) N, F-$Co(OH)_2$/GO, (c) N, F-$Co(OH)_2$/GO-4h and (d) N, F-$Co(OH)_2$/GO-6h.

Figure S9. OER polarization curves of N, F-$Co(OH)_2$/GO before and after iR correction (100%).

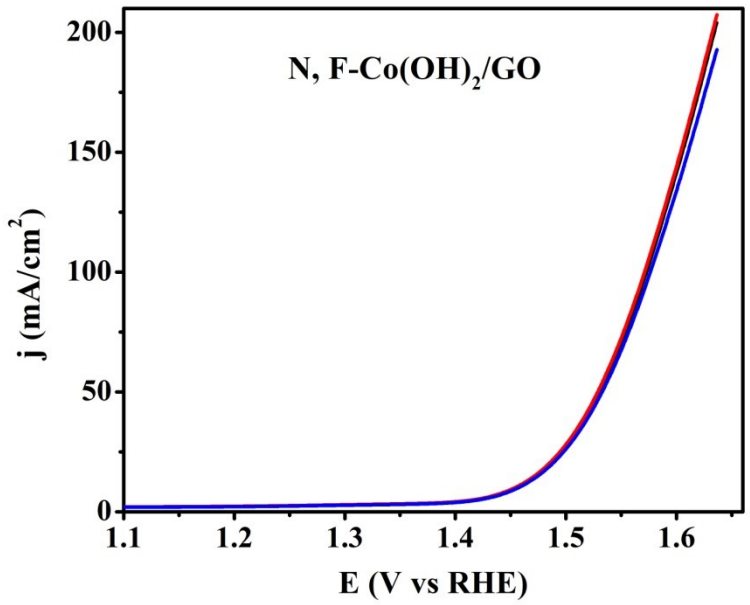


Figure S10. OER polarization curves of N, F-$Co(OH)_2$/GO prepared at three different batches. Colour code black, red and blue represent three different batch sample OER activity.

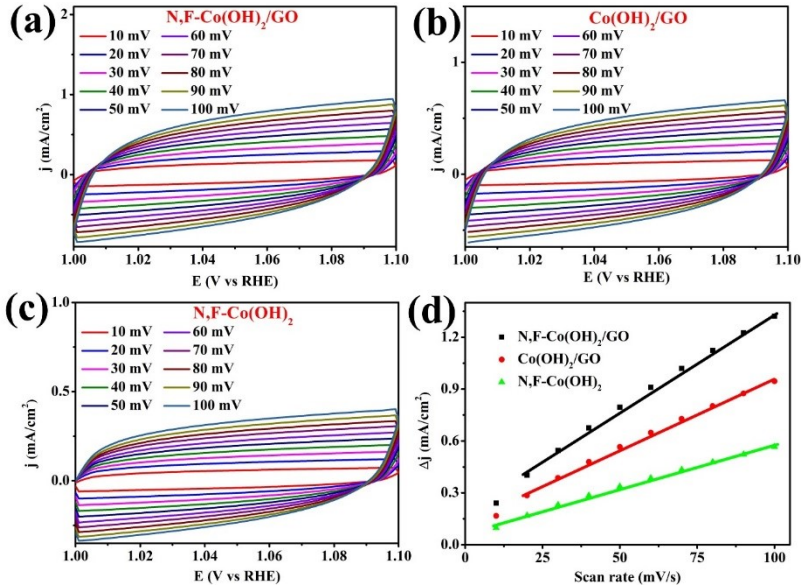


Figure S11. (a, b, c) Double layer capacitance and (d) capacitive currents as a functional of scan rate.

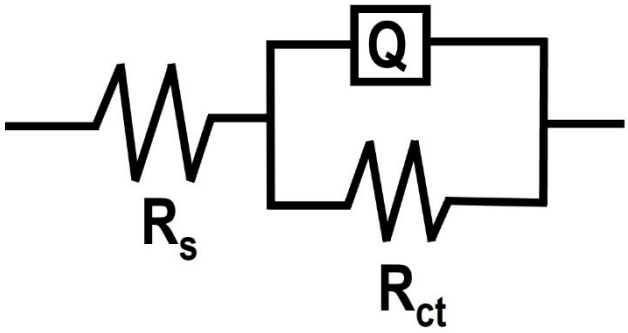


Figure S12. Equivalent circuit diagram of electrochemical impedance study.

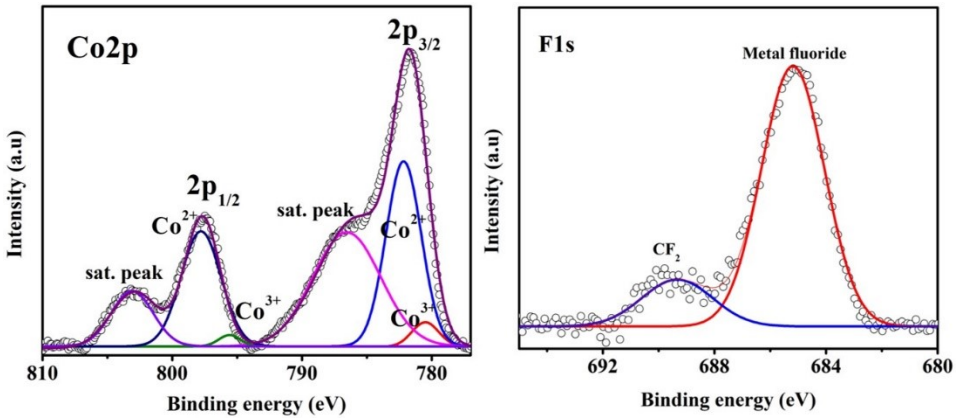


Figure S13. The high-resolution XPS spectra of Co 2p and F 1s in N,F-Co(OH)$_2$/GO after OER studies.