

## Supporting information

# Label-Free Bimetallic In Situ Grown 3D Nickel Foam Supported NH<sub>2</sub>-MIL-88B(Fe<sub>2</sub>Co)-MOF based Impedimetric Immunosensor for the Detection of Cardiac Troponin I

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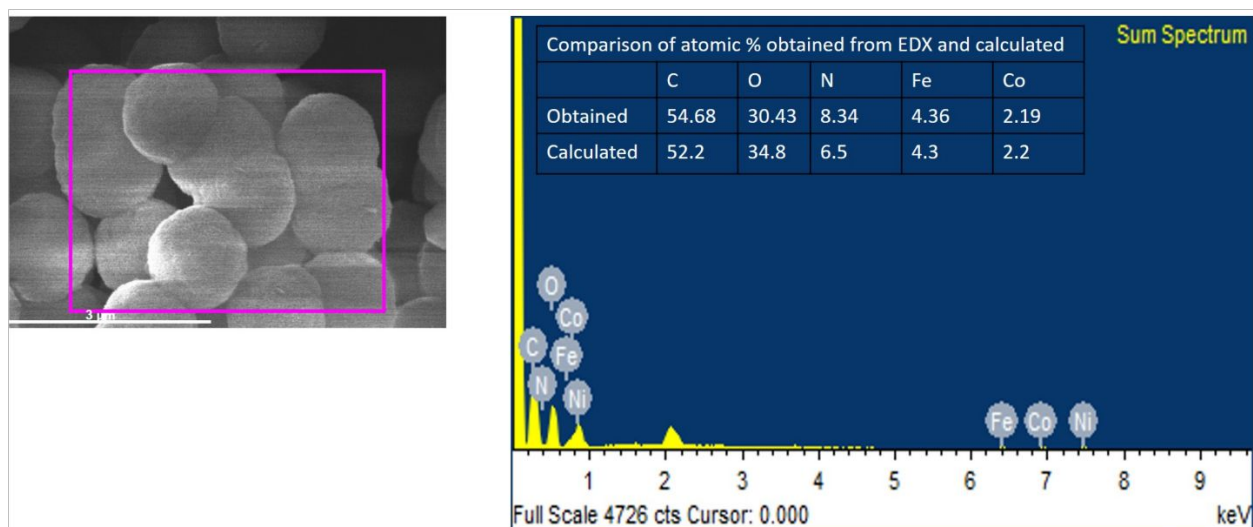
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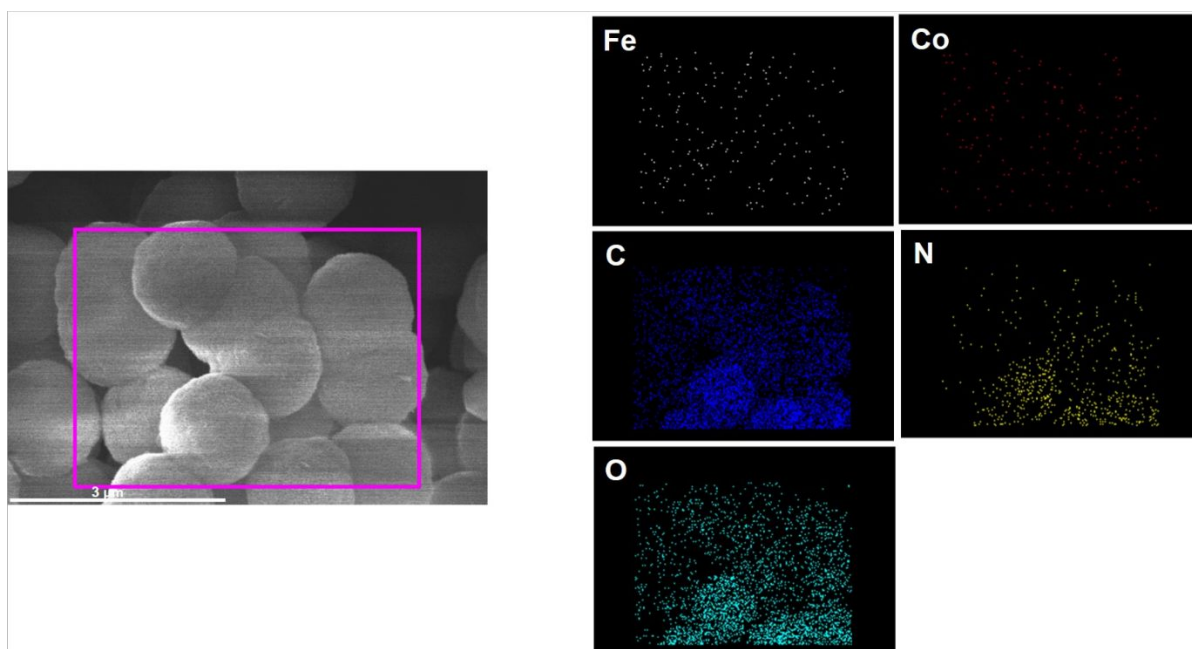
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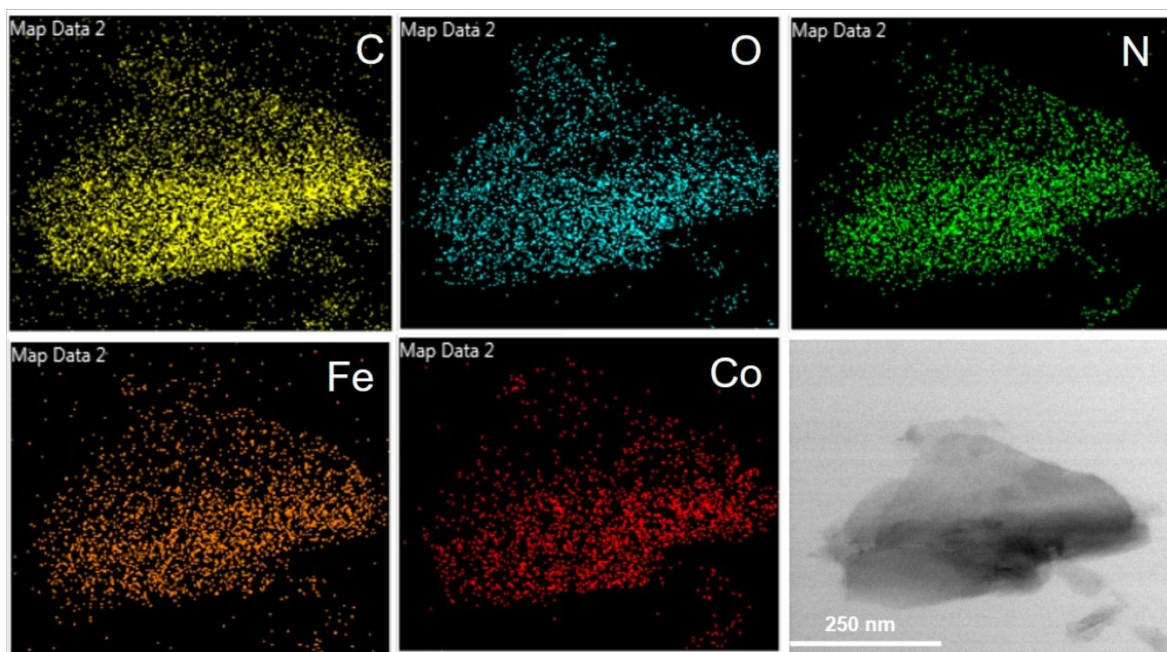
**Keywords:** metal-organic framework, nickel foam, immunosensor, cardiac troponin I



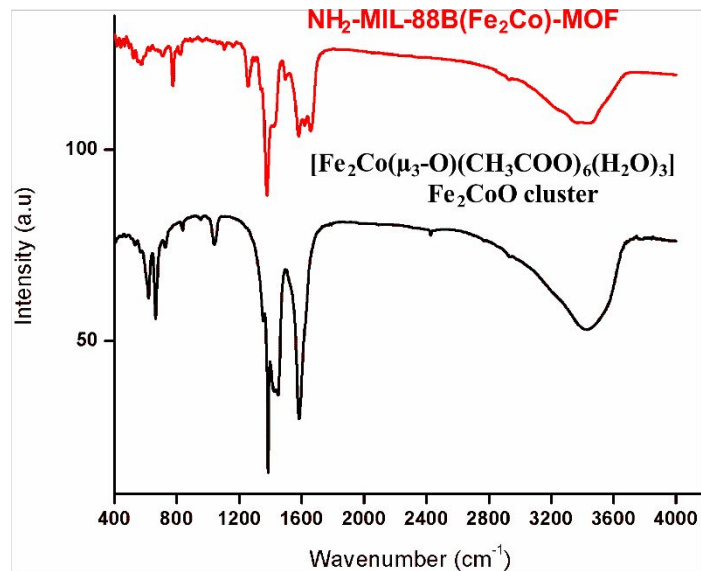
**Figure S1.** SEM image (left) and SEM-EDX obtained from the selected area (right) of  $\text{NH}_2\text{-MIL-88B(Fe}_2\text{Co)-MOF/NF}$  with an inset of table of elemental composition.



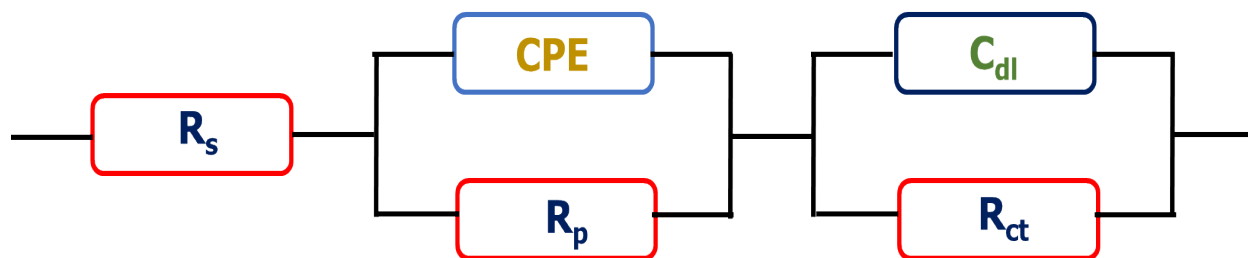
**Figure S2.** The selected SEM image (left) and the area SEM-EDX elemental mapping (right) for C, O, N, Fe, Co and Ni in  $\text{NH}_2\text{-MIL-88B(Fe}_2\text{Co)-MOF/NF}$ .



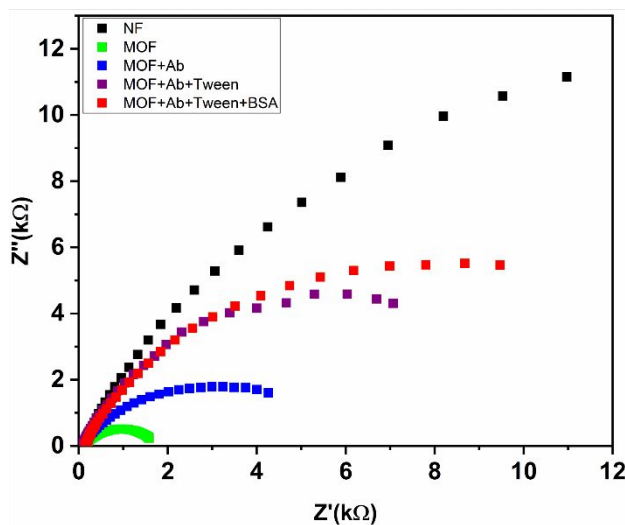
**Figure S3.** TEM image and its corresponding TEM-EDX elemental mapping  $\text{NH}_2\text{-MIL-88B(Fe}_2\text{Co)-MOF/NF}$ .



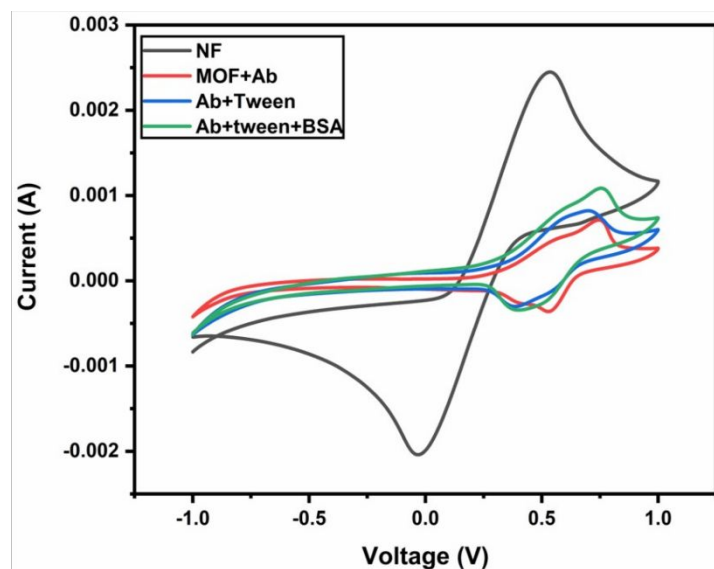
**Figure S4.** FT-IR spectra of  $\text{Fe}_2\text{Co}(\mu_3\text{-O})(\text{CH}_3\text{COO})_6(\text{H}_2\text{O})_3\text{Fe}_2\text{CoO}$  cluster and  $\text{NH}_2\text{-MIL-88B(Fe}_2\text{Co)-MOF/NF}$ .



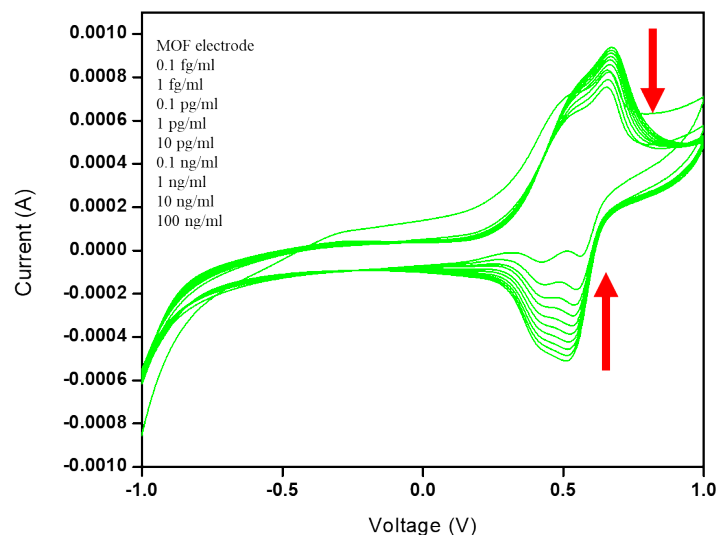
**Figure S5.** Equivalent circuit model for the electrochemical impedance cTnI detection.  $R_s$ ,  $R_p$  and  $R_{ct}$ , represent the electrolyte, electrode porosity, and charge transfer resistance, respectively, whereas the CPE and  $C_{dl}$  represent the constant phase element and double layer capacitance respectively.



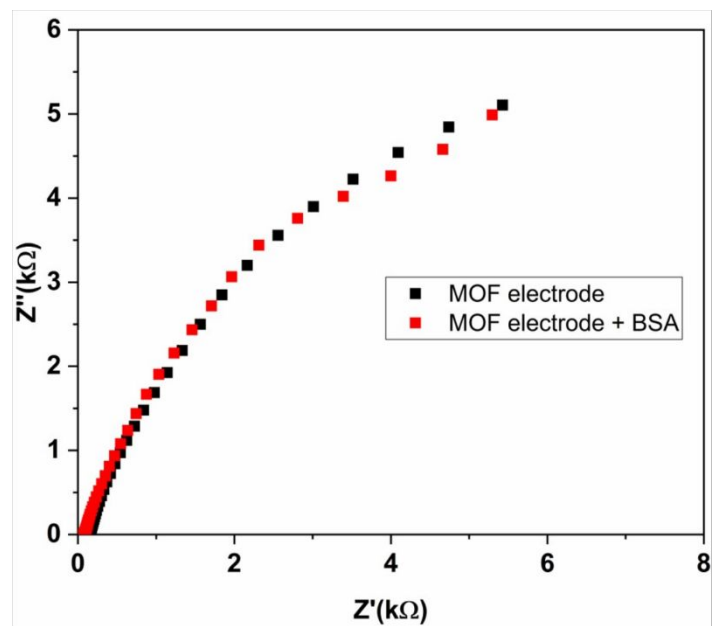
**Figure S6.** Electrochemical measurements for nickel foam (NF) modified MOF electrode (Ab-NH<sub>2</sub>-MIL-88B(Fe<sub>2</sub>Co)-MOF/NF). Nyquist plot obtained from EIS measurements.



**Figure S7.** Cyclic voltammograms obtained during surface functionalization of electrode with antibody using 10 mM potassium ferricyanide and potassium ferrocyanide as redox couple.



**Figure S8.** Cyclic voltammograms obtained during the cyclic voltammetry analysis of varying concentrations of cTnI (0.1 fg/ml – 100 ng/ml) using 10 mM potassium ferricyanide and potassium ferrocyanide as redox couple.



**Figure S9.** Specificity of the MOF electrode in the presence of non-specific BSA (1 mg/ml).