Electronic Supplementary Material (ESI) for CrystEngComm.

Supporting Information

Electrochemical sensor and catalyst on $Cu_3(BTC)_2$ coating electrode from $Cu(OH)_2$ films

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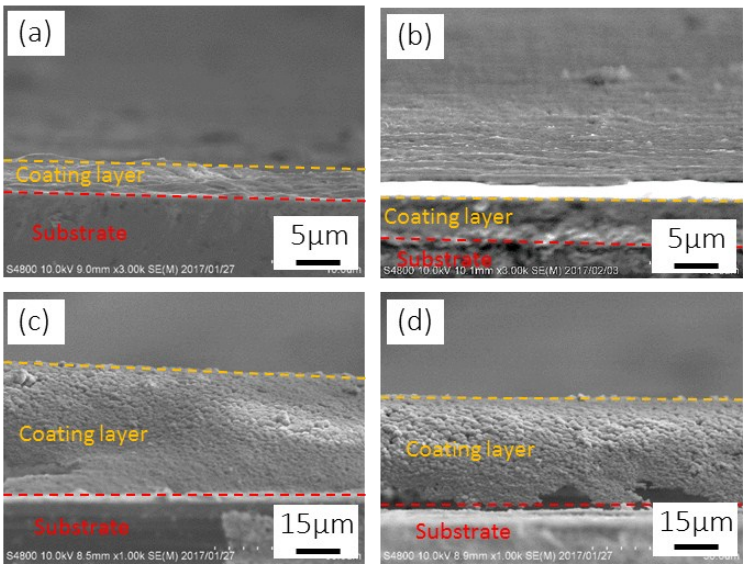

Figure S1 Cross-sectional Field Emission-SEM (FE-SEM) images of the $Cu_3(BTC)_2$ coatings prepared at different EtOH:H_2O volume ratio; (a) 1:0, (b) 5:2, (c) 1:1, (d) 2:5. Broken red and orange lines show the substrate/coating and coating/air interfaces, respectively. The thickness of the films was (a) 3.1, (b) 5.1, (c) 41.5 and (d) 37.1 µm.

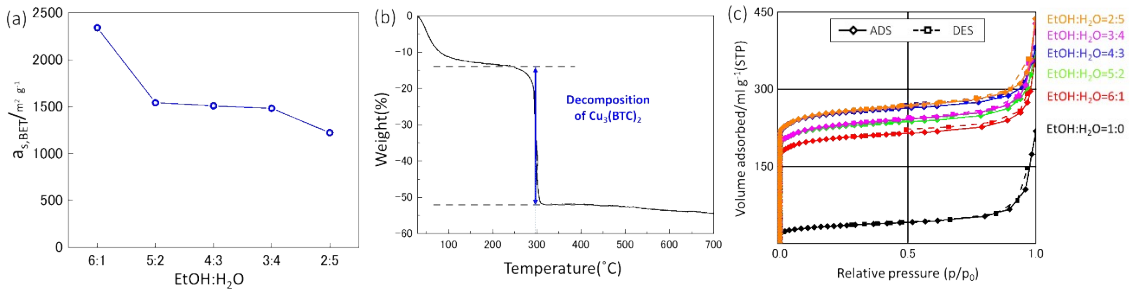

Figure S2 (a) Calculated specific surface area of $Cu_3(BTC)_2$ MOF component in the coatings prepared at different EtOH:H_2O volume ratios. The values were calculated by the weight ratio of $Cu_3(BTC)_2$ in the coatings obtained from TG-DTA investigation and the specific surface area of the composites obtained from BET investigation, as same method reported previously[1]. (b) TG carve of $Cu_3(BTC)_2$ prepared with 1:1. (c) N_2 isotherms of $Cu_3(BTC)_2$ coating prepared at different EtOH:H_2O volume ratios.

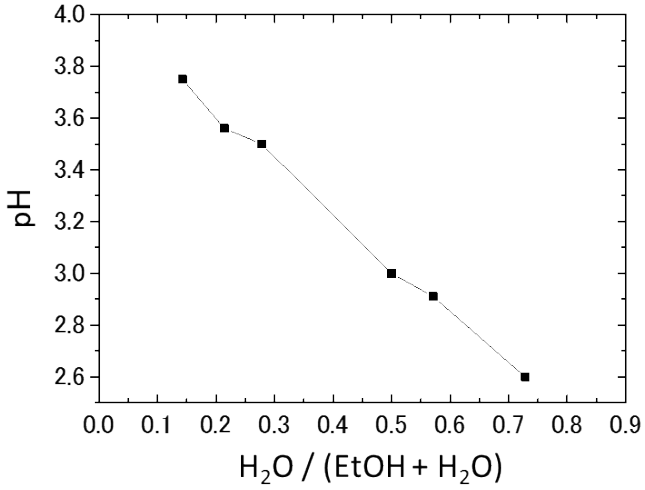

Figure S3 pH-value of the H_3BTC-containing solution with different H_2O/(EtOH + H_2O) (volume ratio)

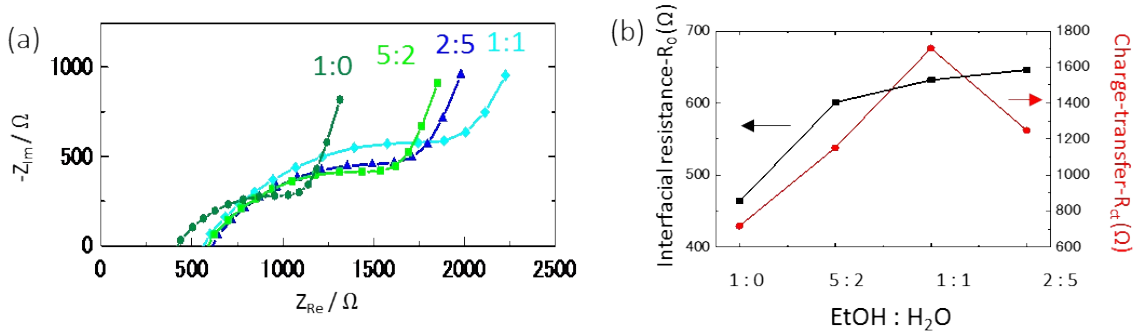

Figure S4 (a)The electrochemical impedance spectra of the $Cu_3(BTC)_2$ coatings on gold electrodes in the frequency range of 100 kHZ to 10 mHz with an AC voltage amplitude of 10 mV in 0.1 M tetraoctylammonium tetrafluoroborate ($[CH_3(CH_2)_7]_4N(BF_4)$). (b) Interfacial resistance R_0 and charge-transfer-R_{ct} calculated from the electrochemical impedance spectra.

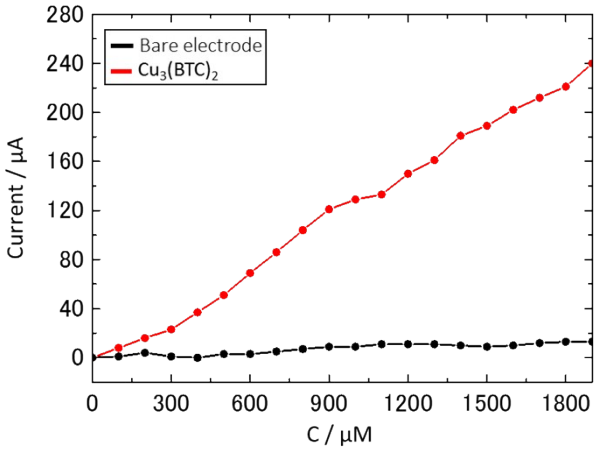

Figure S5 Plot of electrocatalytic current of glucose versus its concentrations from 75 to 1800 μM.

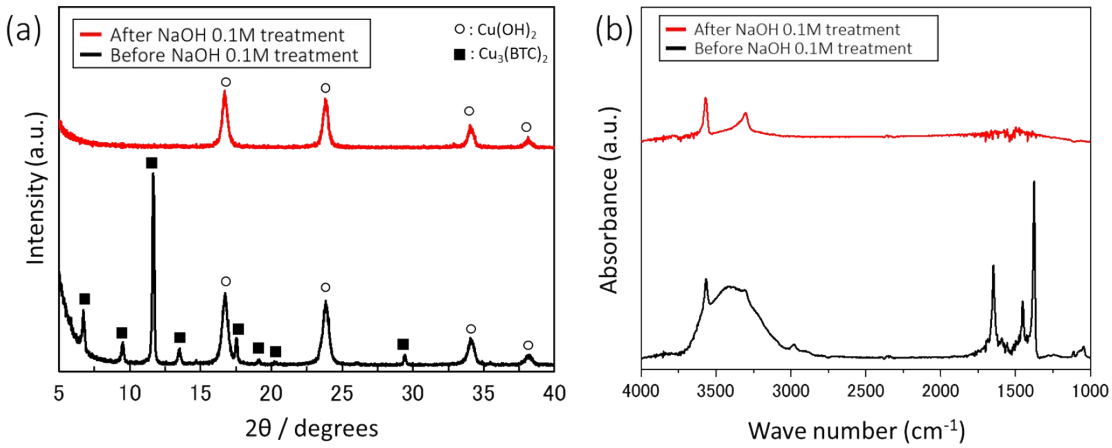

Figure S6 (a) XRD patterns and (b) FTIR spectra of $Cu_3(BTC)_2$ MOF coating prepared at 1:1 before and after soaking into the NaOH electrolytic solution for electrocatalytic glucose oxidation.

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[1] K. Okada, R. Ricco, Y. Tokudome, M. J. Styles, A. J. Hill, M. Takahashi, P. Falcaro, *Adv. Funct. Mater.*, 2014, 24, 1969