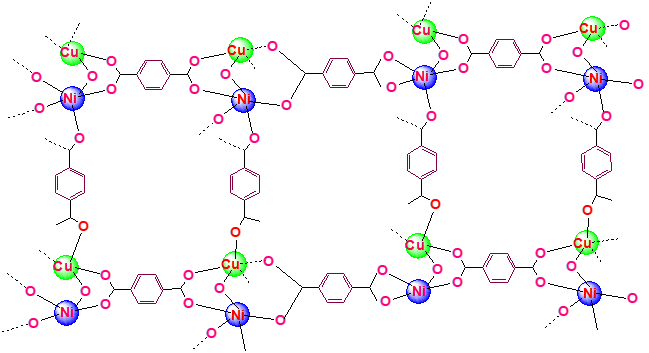
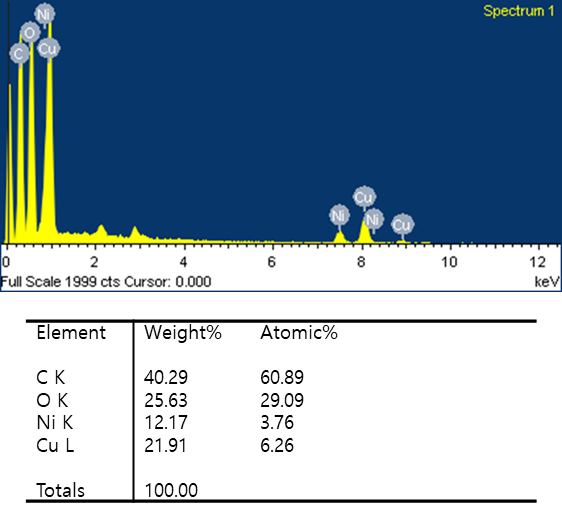
**Metal organic framework- derived Ni-Cu bimetallic electrocatalyst for efficient oxygen evolution reaction**

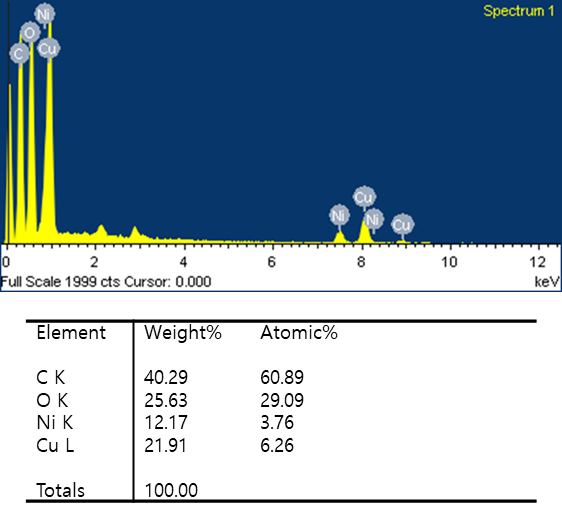
****

**Scheme 1.** Hypothetical structure of synthesized NiCu-MOF.

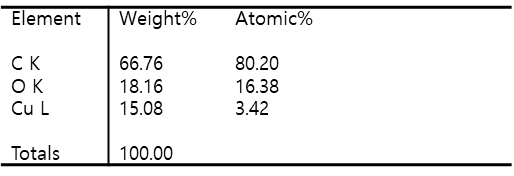


**Fig 1.** EDX spectrum of NiCu-MOF catalyst.

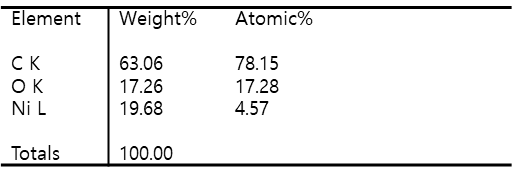
**Table 1.** EDX analysis of NiCu-MOF catalyst.



**Table 2.** EDX analysis of Cu-MOF catalyst.



**Table 3.** EDX analysis of Ni-MOF catalyst.

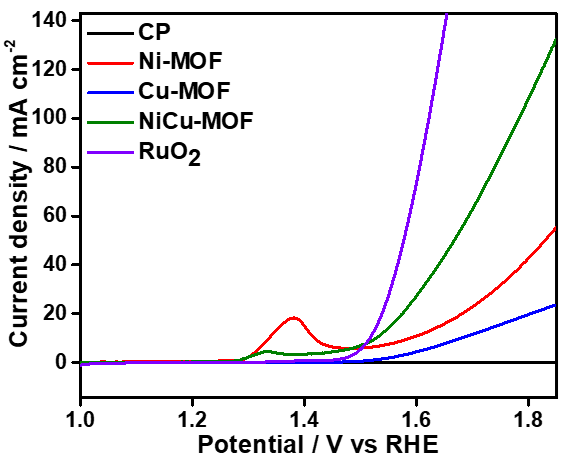


**Table 4.** Elemental composition obtained from XPS.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Peak BE | Height Counts | FWHM eV | Area (P) CPS.eV | Area (N) | At. % |
| C1s | 285.02 | 66438.48 | 3.47 | 279357.2 | 39727.52 | 35.91 |
| O1s | 532.65 | 76525.16 | 3.13 | 269951.4 | 13494.98 | 12.2 |
| Ni2p | 858.21 | 9121.45 | 4.33 | 107939 | 1149.13 | 1.04 |
| Cu2p | 935.38 | 30044.59 | 4.33 | 290910.3 | 2763.98 | 2.5 |



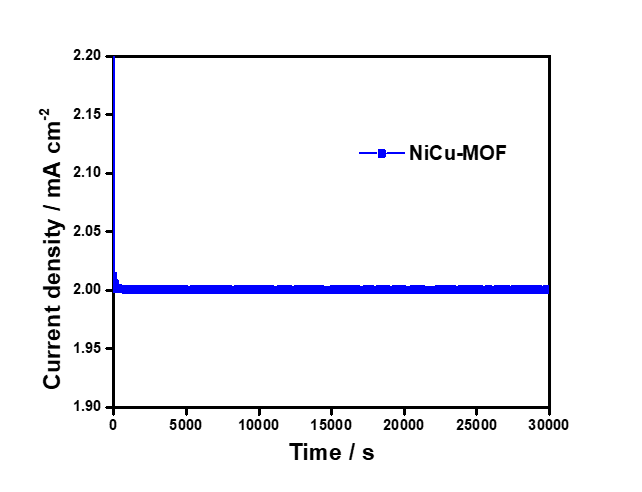
**Fig S2.** XPS survey spectrum of NiCu-MOF.



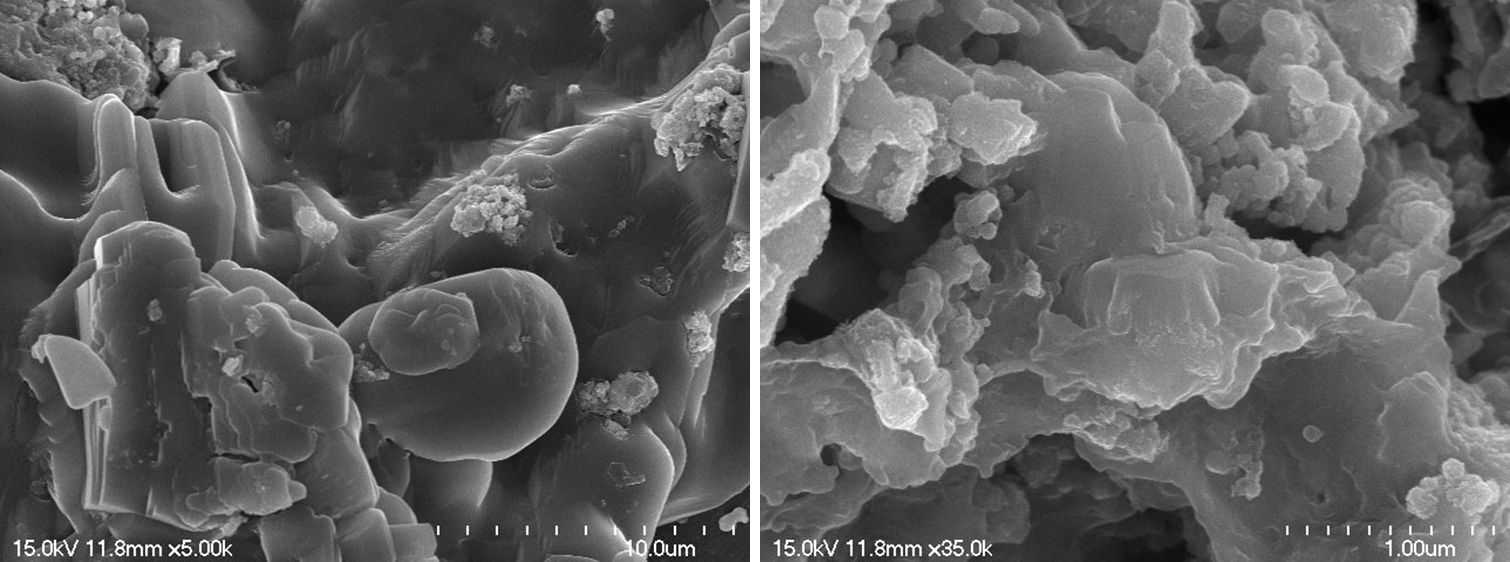
**Fig S3.** Comparison LSV study RuO2 with other catalyst.



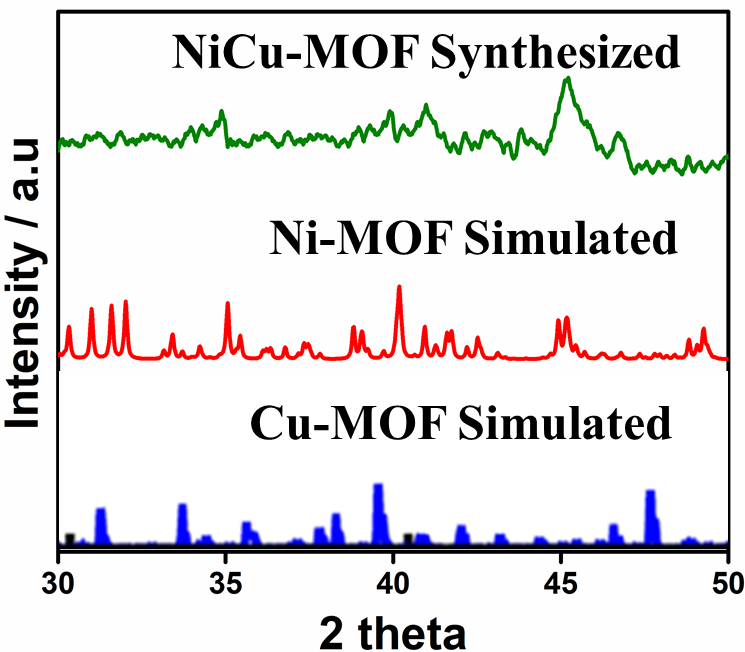
**Fig S4.** Electrochemical impedance spectrum of Ni-MOF, Cu-MOF and NiCu-MOF catalyst.



**Fig S5.** Chronoamprometry study of NiCu-MOF catalyst.



**Fig S6**. FE-SEM images of NiCu-MOF after OER study.



**Fig S7.** Simulated XRD pattern of Ni-MOF (Yang et al., 2014) and Cu-MOF (Zhang et al., 2018) and synthesized NiCu-MOF.

**Table 5**. Comparison of OER onset potential, tafel slope and overpotential of different Ni and Cu based materials.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No | Catalyst | Onset potential (V) | Tafel  (mV/dec) | Overpotential   (mV) | Ref. |
| 1. | Ni/Co-P-1/0 | 1.65 | 113 | 423 | Zheng et al., 2019 |
| 2. | Co-Ni/HA-MWCNTs | 1.50 | 41.8 | 270 | Safavi et al., 2020 |
| 3. | NiO/Ni/C | 1.54 | - | 310 | Zhang et al., 2017 |
| 4. | Ni0.78WO2.72 | 1.50 | - | 270 | Xi et al., 2017 |
| 5. | Ni-Bi/RGO | 1.58 | 85 | 359 | Cao et al., 2018 |
| 6. | NiCo-LDH | 1.56 | 41 | 335 | Kanan et al., 2008 |
| 7. | MWCNTs/CuO | 1.58 | 53 | 350 | Qian et al., 2018 |
| 8. | Ni2.85Cu0.15S2 | 1.489 | 54.9 | 259 | Liu et al., 2021 |
| 9. | CoNi-CuHP/NF | 1.6 | 88 | 370 | Zhang et al., 2018 |
| 10 | NiCu-MOF | 1.48 | 169 | 250 | This work |

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