

## Supplementary Information

### **Room-temperature gas sensor based on 2D Zn-Ni-Co ternary oxide nanoflakes for selective and sensitive ammonia detection**

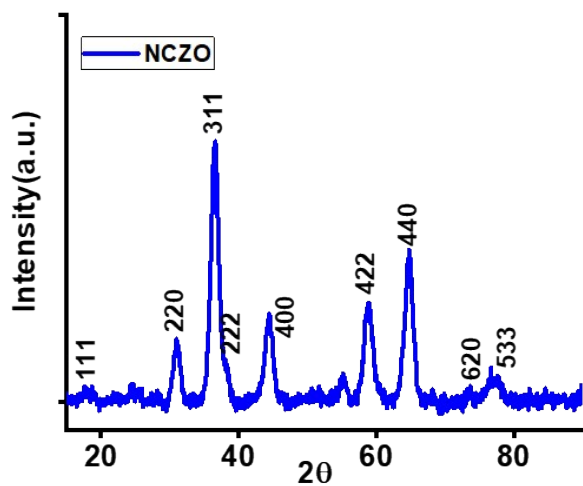
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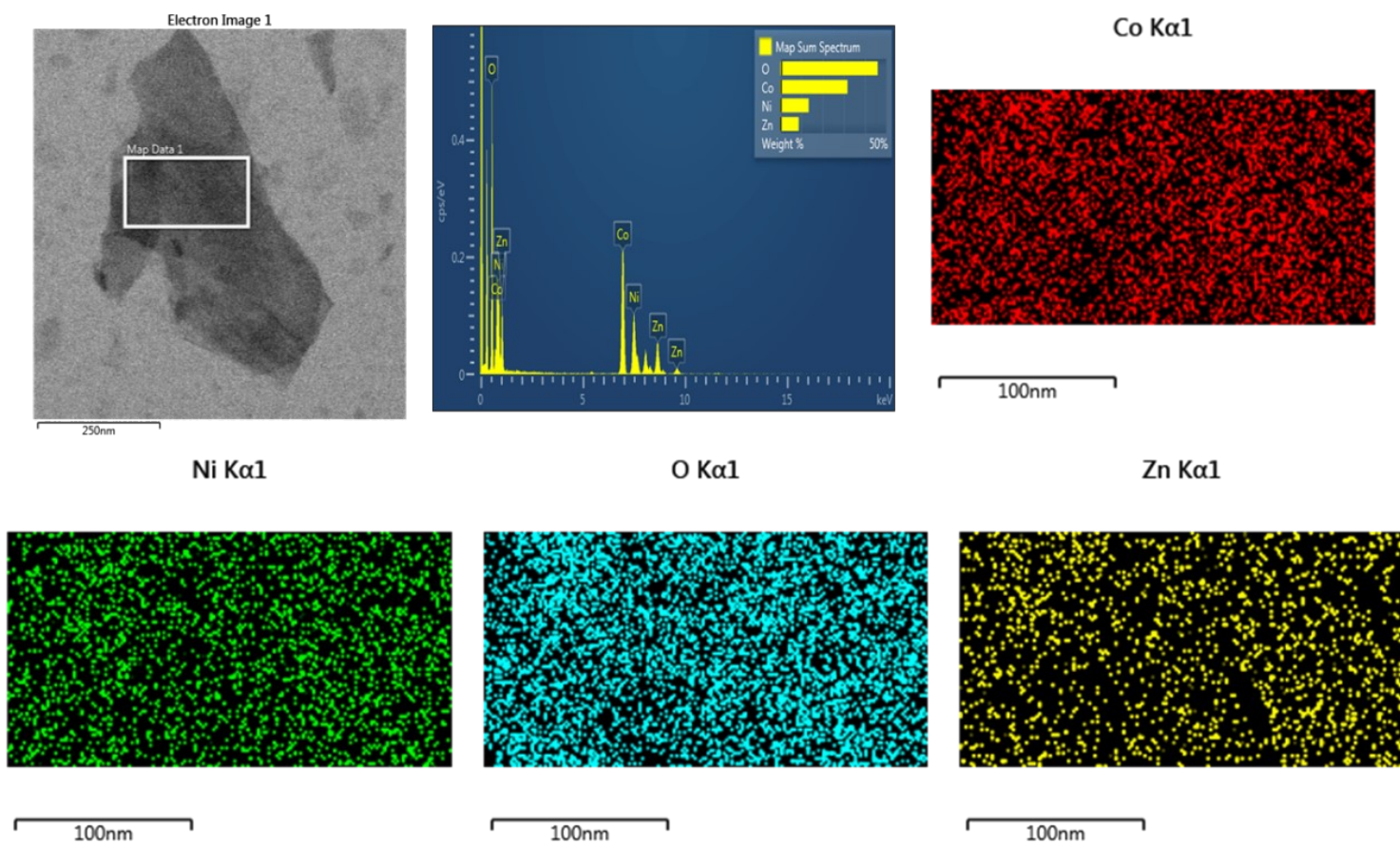
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#### **XRD Analysis**

The crystallographic phase of 2D NiCo<sub>2</sub>ZnO<sub>4</sub> nanoflakes was investigated by XRD pattern as shown in **Fig. S1**. The XRD peaks of 2D NiCo<sub>2</sub>ZnO<sub>4</sub> nanoflakes samples are appeared at 2 $\theta$ =18.2<sup>o</sup>, 30.8<sup>o</sup>, 36.4<sup>o</sup>, 38.1<sup>o</sup>, 44.5<sup>o</sup>, 48.8<sup>o</sup>, 58.67<sup>o</sup>, 73.7<sup>o</sup>, 77.1<sup>o</sup> and corresponding planes are (111), (220), (311), (222), (400), (422), (440), (620), and (533) respectively. The appeared XRD pattern is similar to NiCo<sub>2</sub>O<sub>4</sub> peak, a slight peak shift is observed due to the substitution of the Zn inside the NiCo<sub>2</sub>O<sub>4</sub> crystal structure [1].



**Fig. S1:** XRD pattern of the 2D NiCo<sub>2</sub>ZnO<sub>4</sub> nanoflakes



**Fig. S2.** EDX spectrum and elemental mapping of the 2D NiCo<sub>2</sub>ZnO<sub>4</sub> nanoflakes obtained from TEM image

## XPS analysis

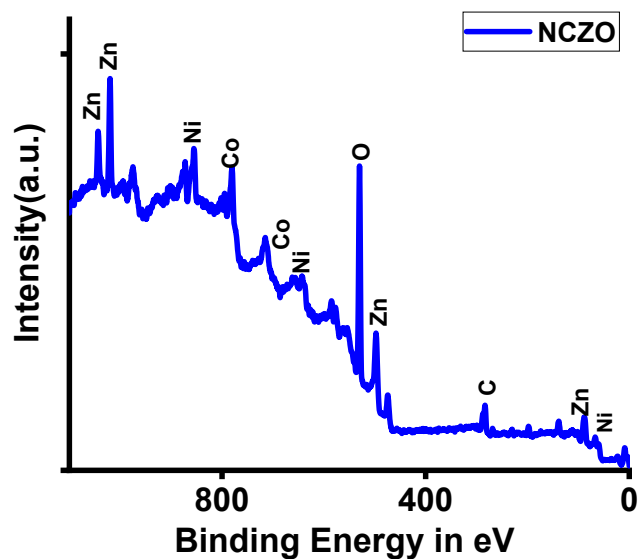


Fig. S3. XPS survey spectra of the 2D NiCo<sub>2</sub>ZnO<sub>4</sub> (NCZO) nanoflakes

## References

1. Li, L., Zhang, Y., Shi, F., Zhang, Y., Zhang, J., Gu, C., ... & Tu, J. (2014). Spinel manganese–nickel–cobalt ternary oxide nanowire array for high-performance electrochemical capacitor applications. *ACS applied materials & interfaces*, 6(20), 18040-18047.