

### 3D Printing of Cellulose/Leaf-like Zeolitic Imidazolate Frameworks (CelloZIF-L) for Adsorption of Carbon dioxide (CO<sub>2</sub>) and Heavy Metal Ions

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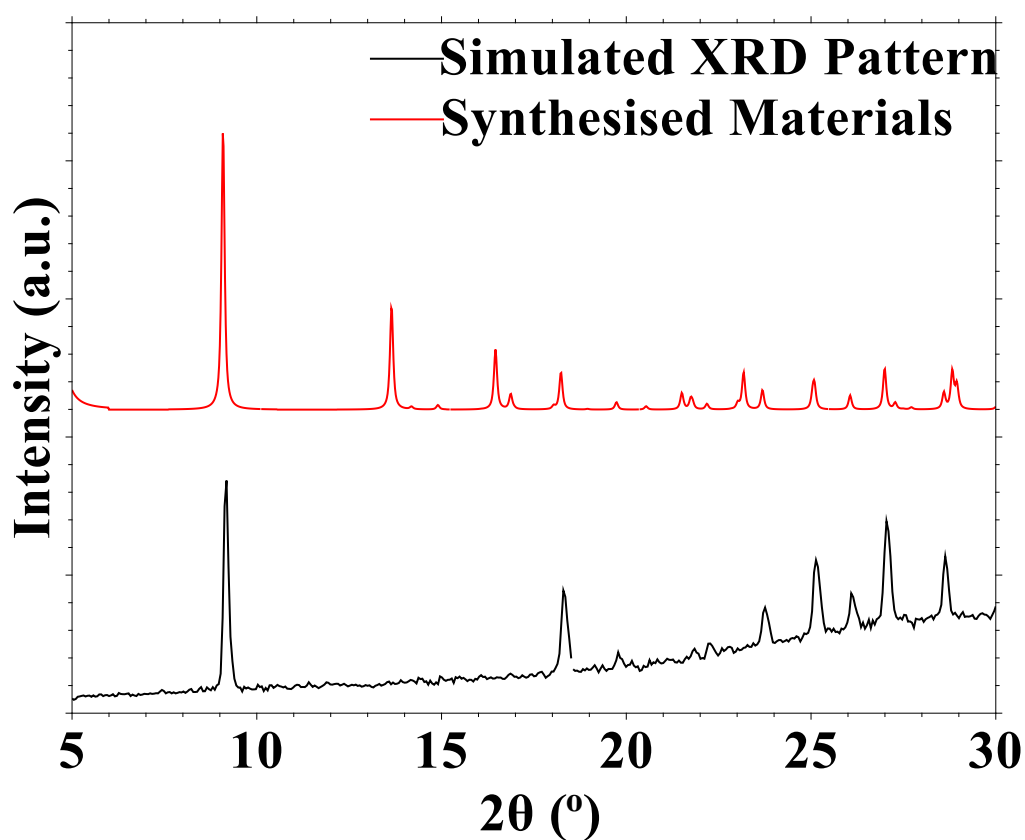
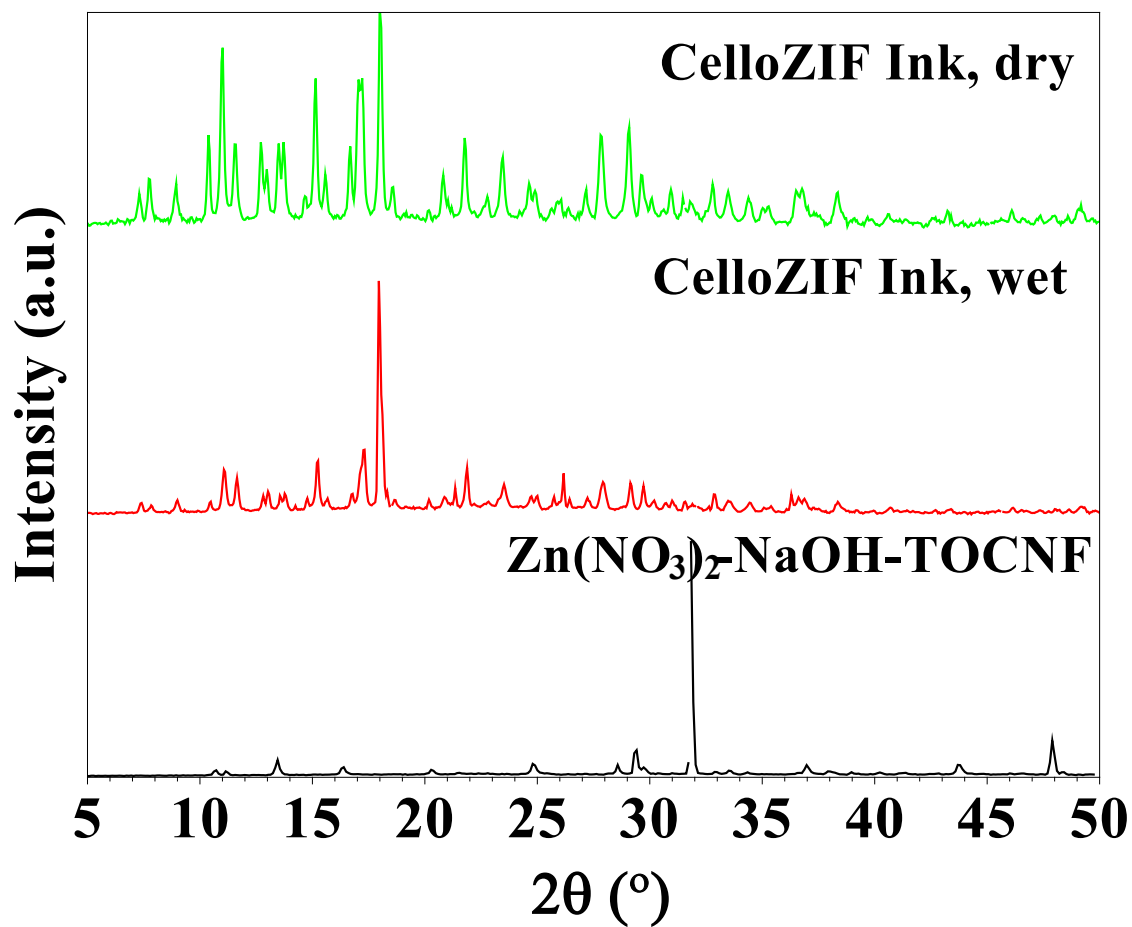
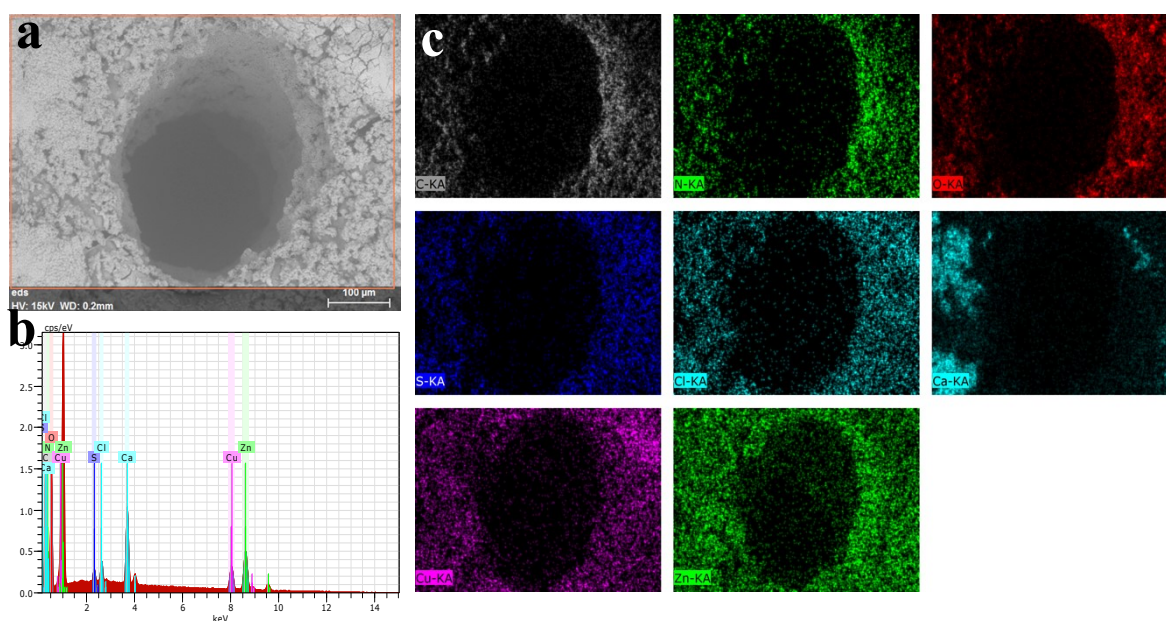


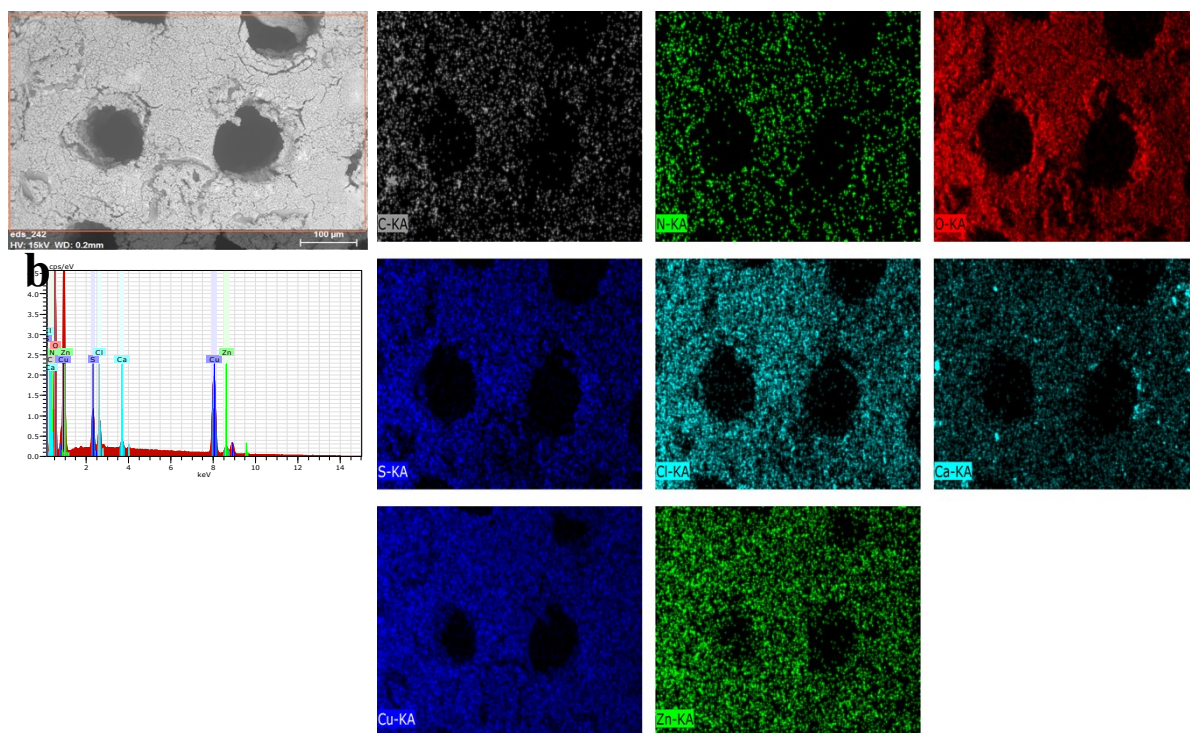
Figure S1 XRD pattern for Zinc hydroxyl nitrate and simulated pattern.



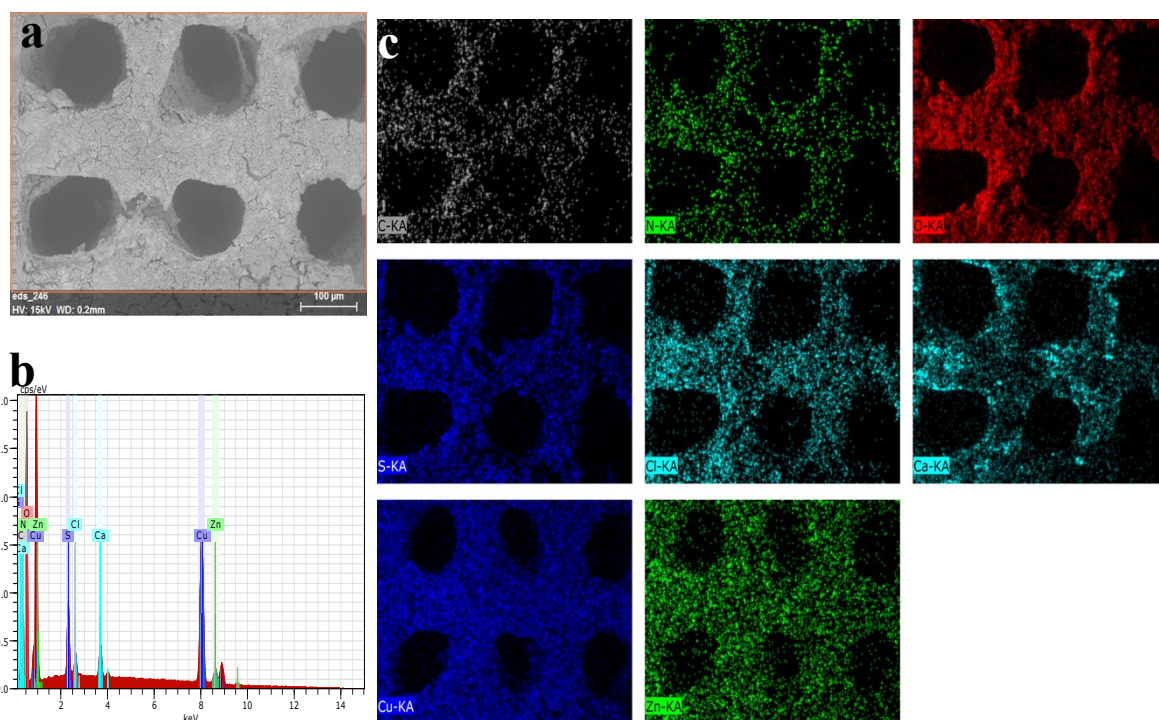
**Figure S2** XRD patterns for  $\text{Zn}(\text{NO}_3)_2/\text{NaOH}/\text{TOCNF}$  and CelloZIF-L ink in wet and dry forms.



**Figure S3** a) SEM image, b) EDX analysis, and c) EDX mapping for  $\text{Cu}^{2+}$  (5 ppm) adsorbed into 3D CelloZIF-L\_Cubs.

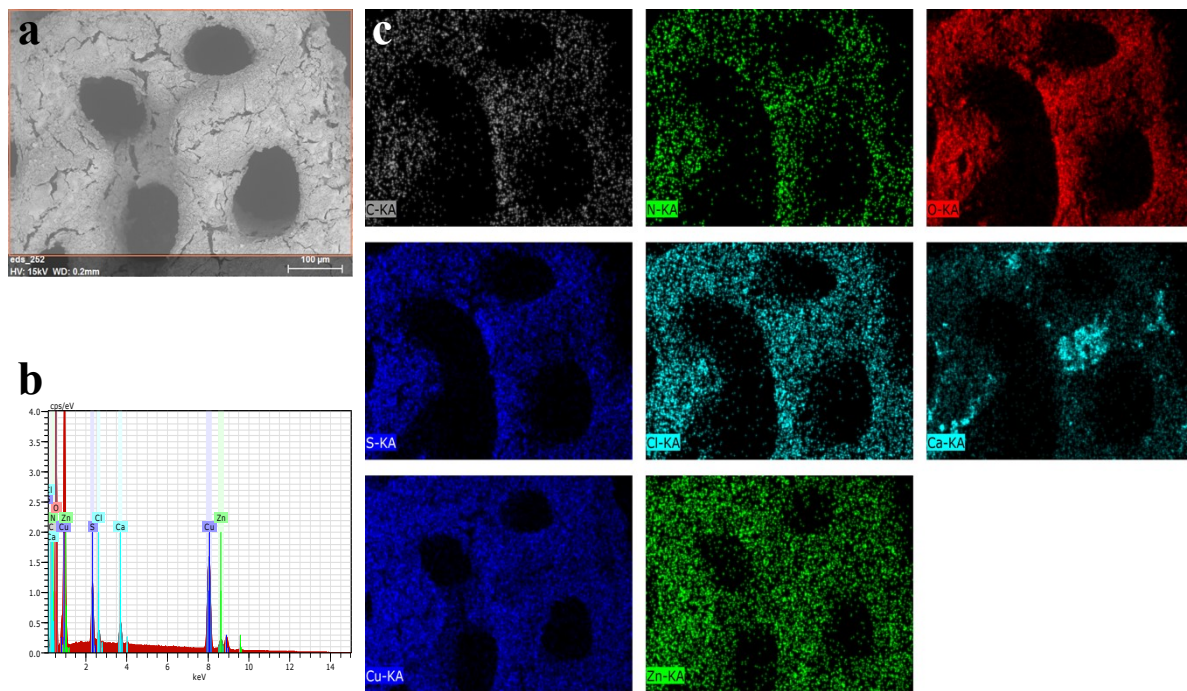


**Figure S4** a) SEM image, b) EDX analysis, and c) EDX mapping for  $\text{Cu}^{2+}$  (10 ppm) adsorbed into 3D CelloZIF-L\_Cubs.



**Figure S5** a) SEM image, b) EDX analysis, and c) EDX mapping for  $\text{Cu}^{2+}$  (50 ppm) adsorbed into 3D CelloZIF-L\_Cubs.





**Figure S6** a) SEM image, b) EDX analysis, and c) EDX mapping for  $\text{Cu}^{2+}$  (100 ppm) adsorbed into 3D CelloZIF-L\_Cubs.