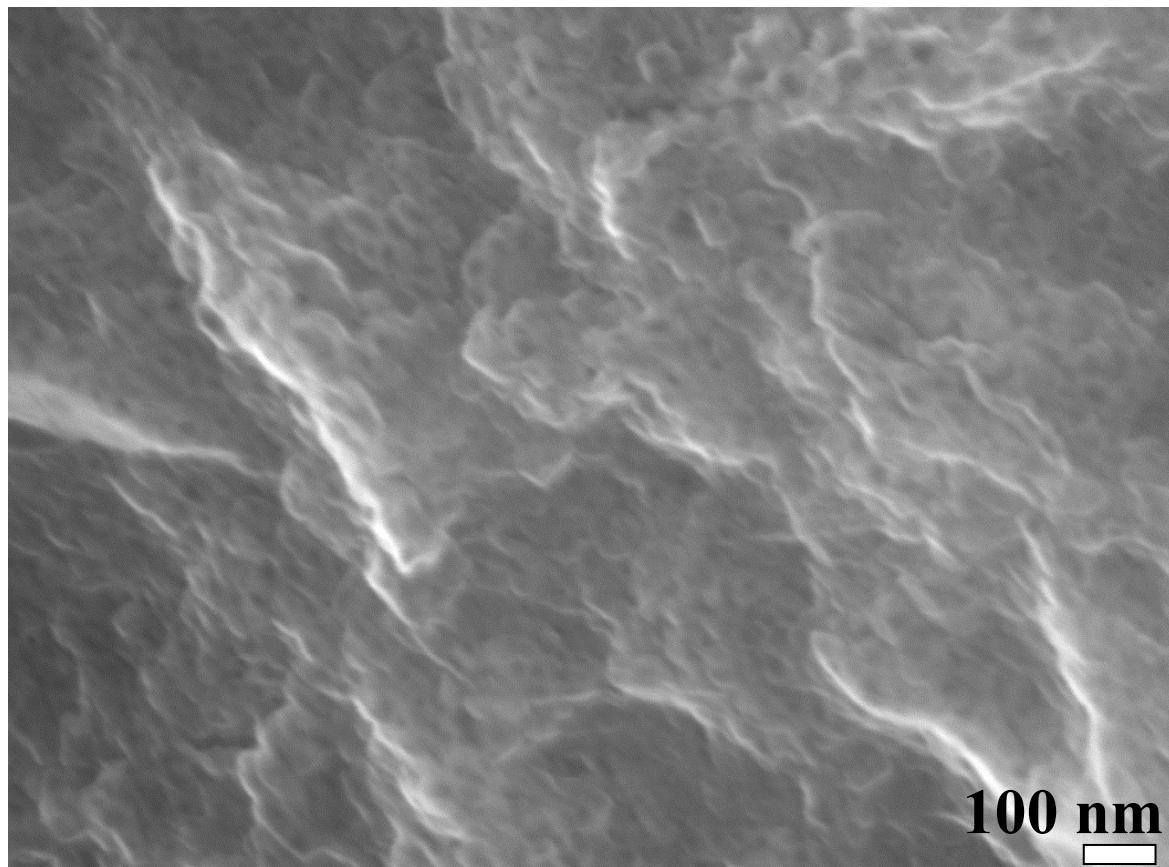


**Electronic Supporting Information**

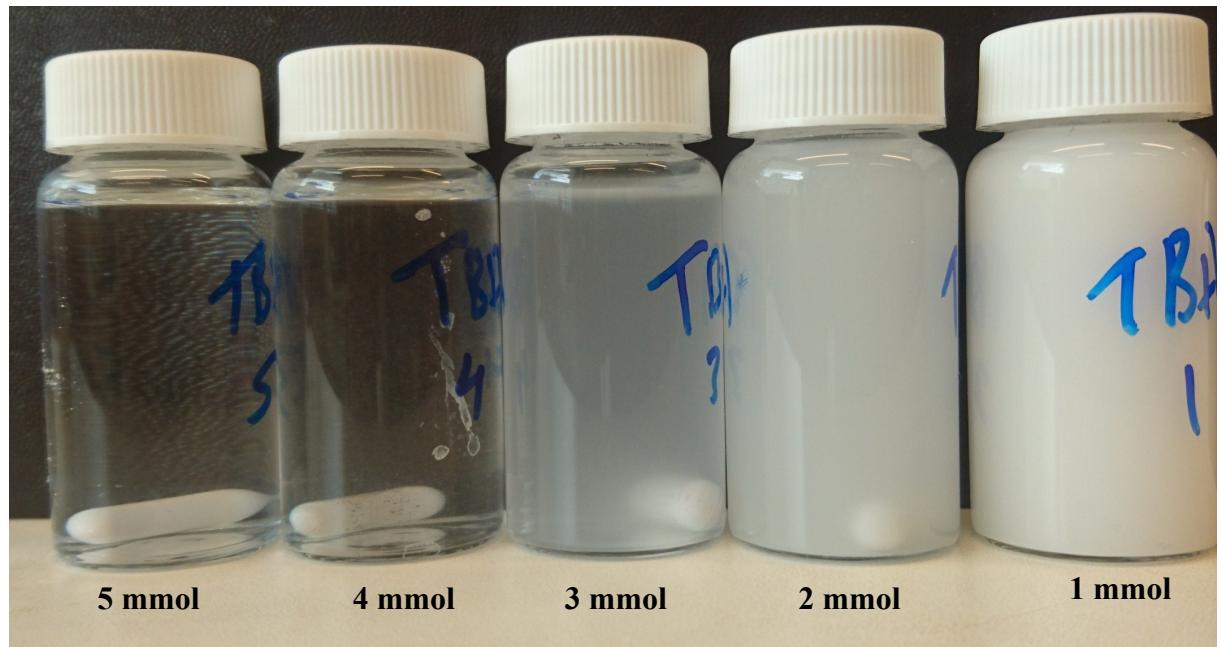
**Hierarchical Porous ZIF-8 for Hydrogen Production via the Hydrolysis of Sodium Borohydride**

Hani Nasser Abdelhamid<sup>†\*</sup>

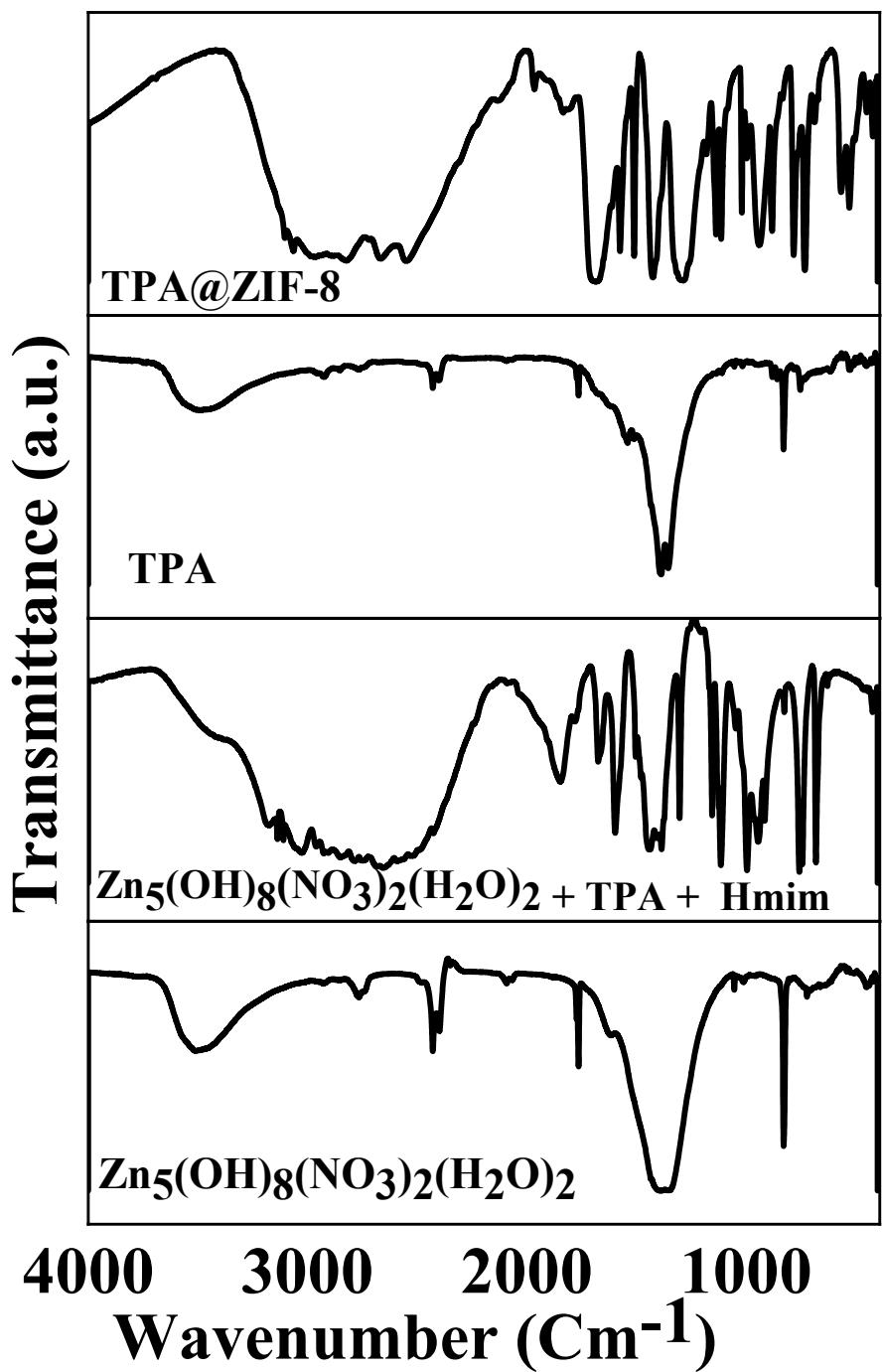
<sup>†</sup>Advanced Multifunctional Materials Laboratory, Department of Chemistry, Assiut University, 71516, Assiut, Egypt  
Email: [hany.abdelhamid@aun.edu.eg](mailto:hany.abdelhamid@aun.edu.eg) (H.N. Abdelhamid)



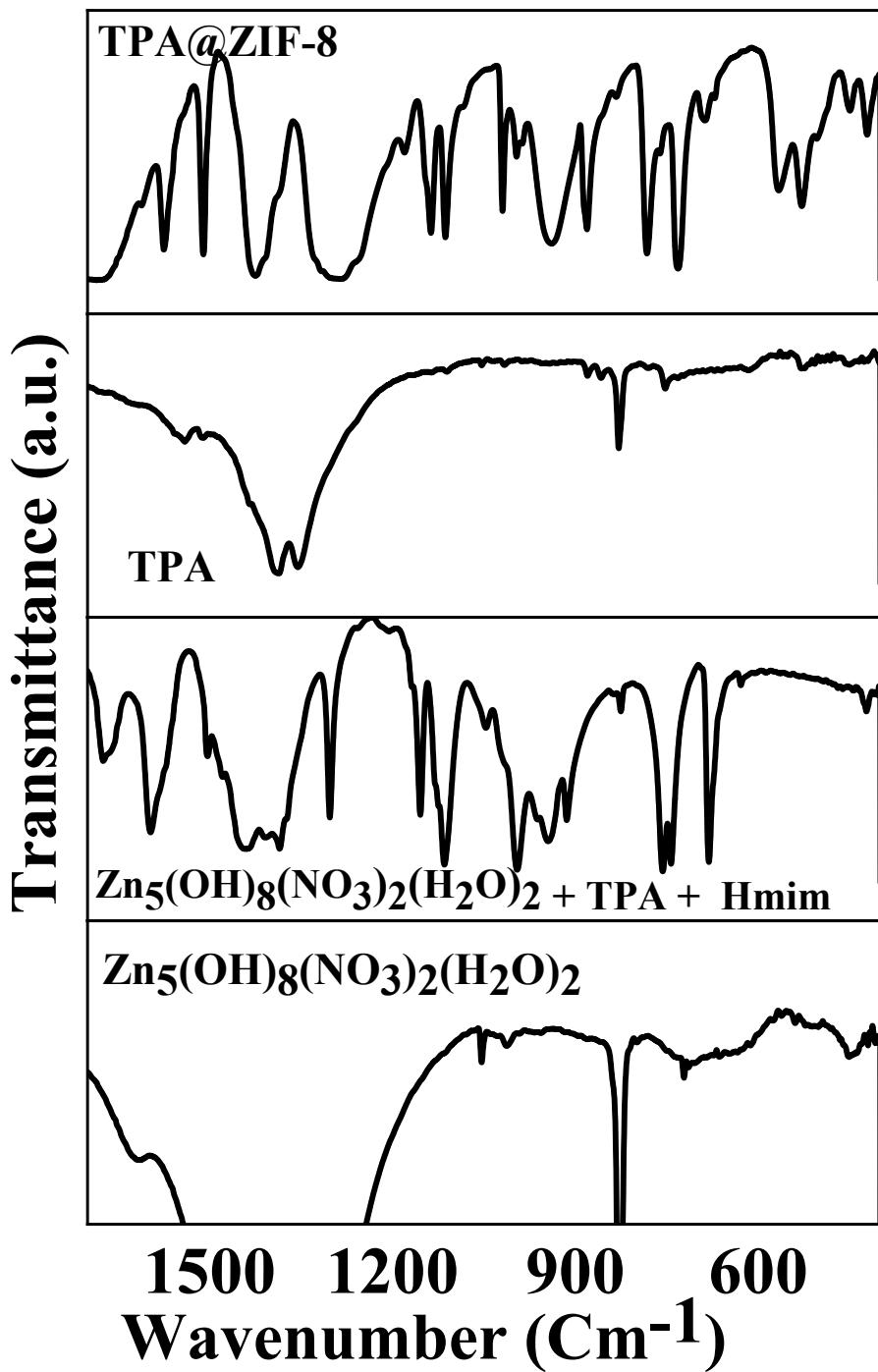
**Figure S1.** SEM image of  $\text{Zn}_5(\text{OH})_8(\text{NO}_3)_2(\text{H}_2\text{O})_2$ .



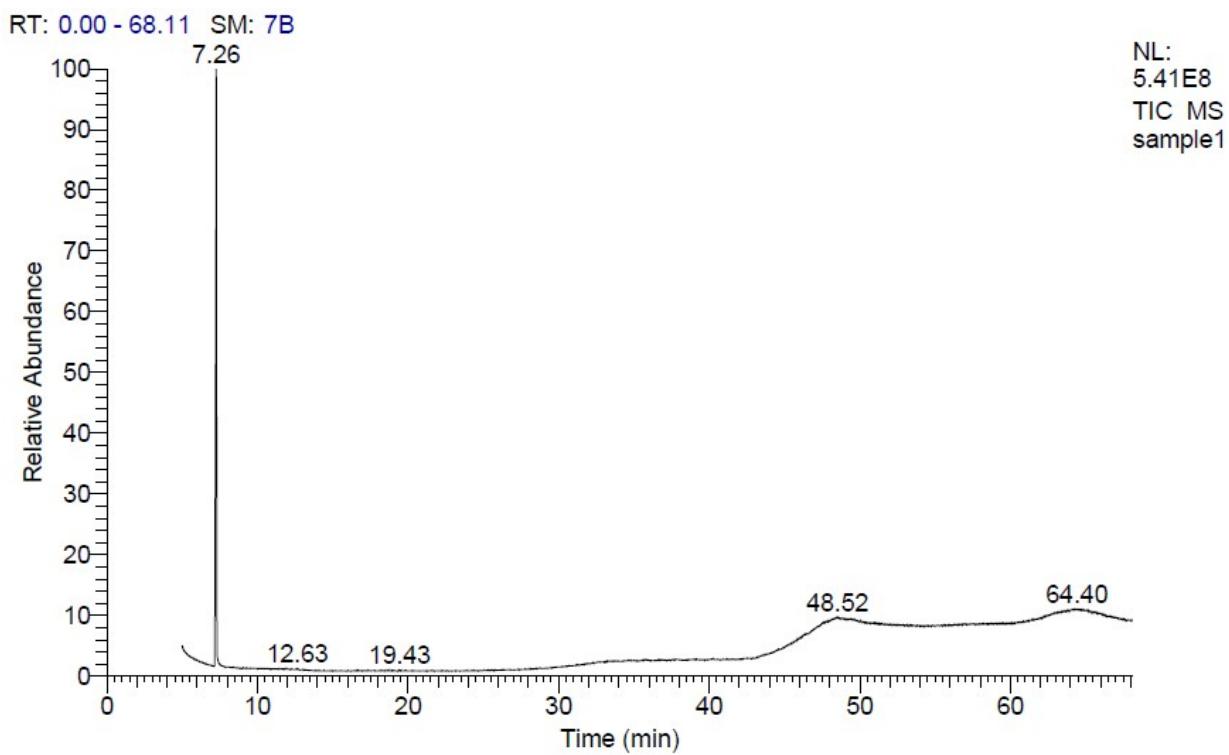
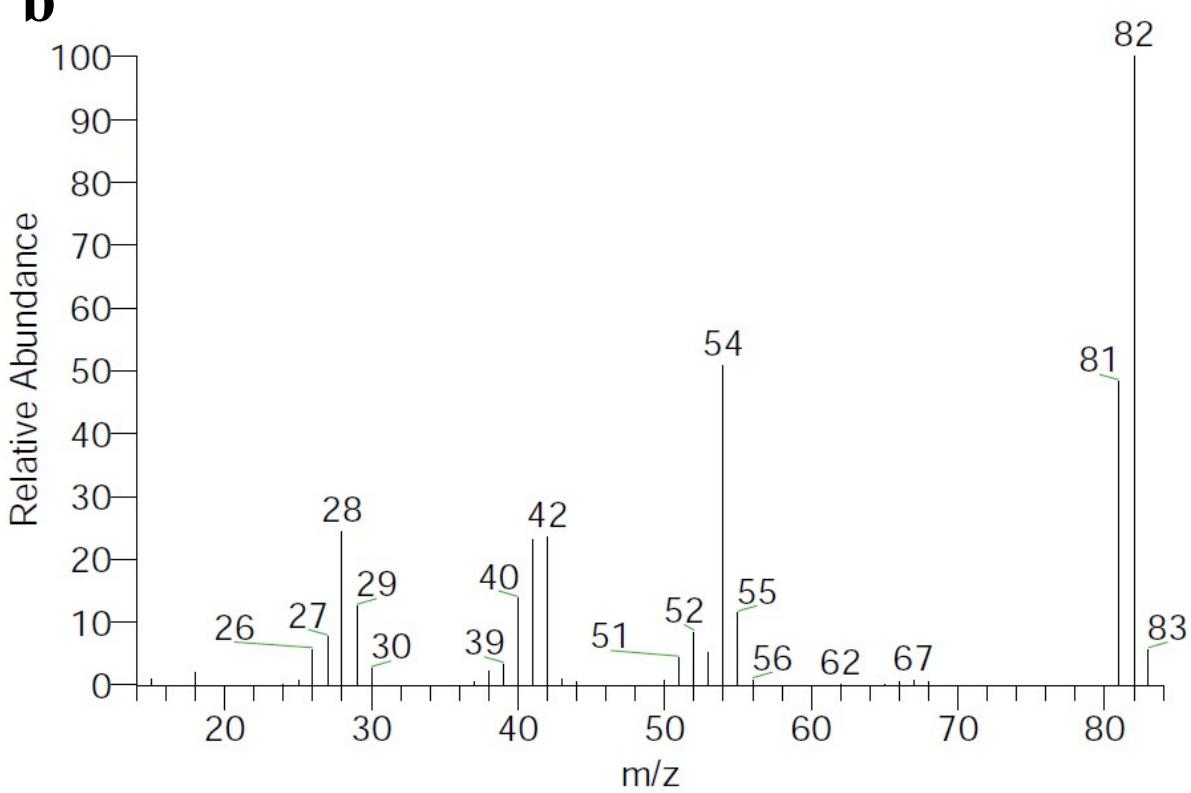
**Figure S2.** Photo images of Scintillation Vials after 2h of stirring for different concentration of TPA (1 - 5 mmol).



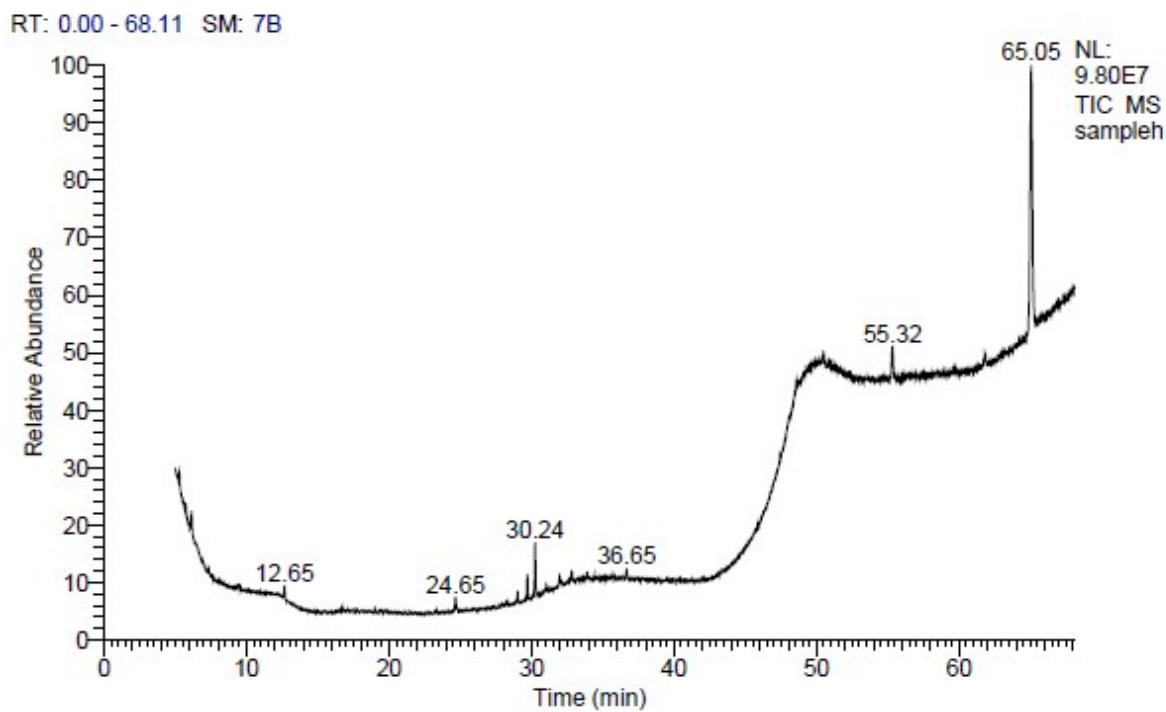
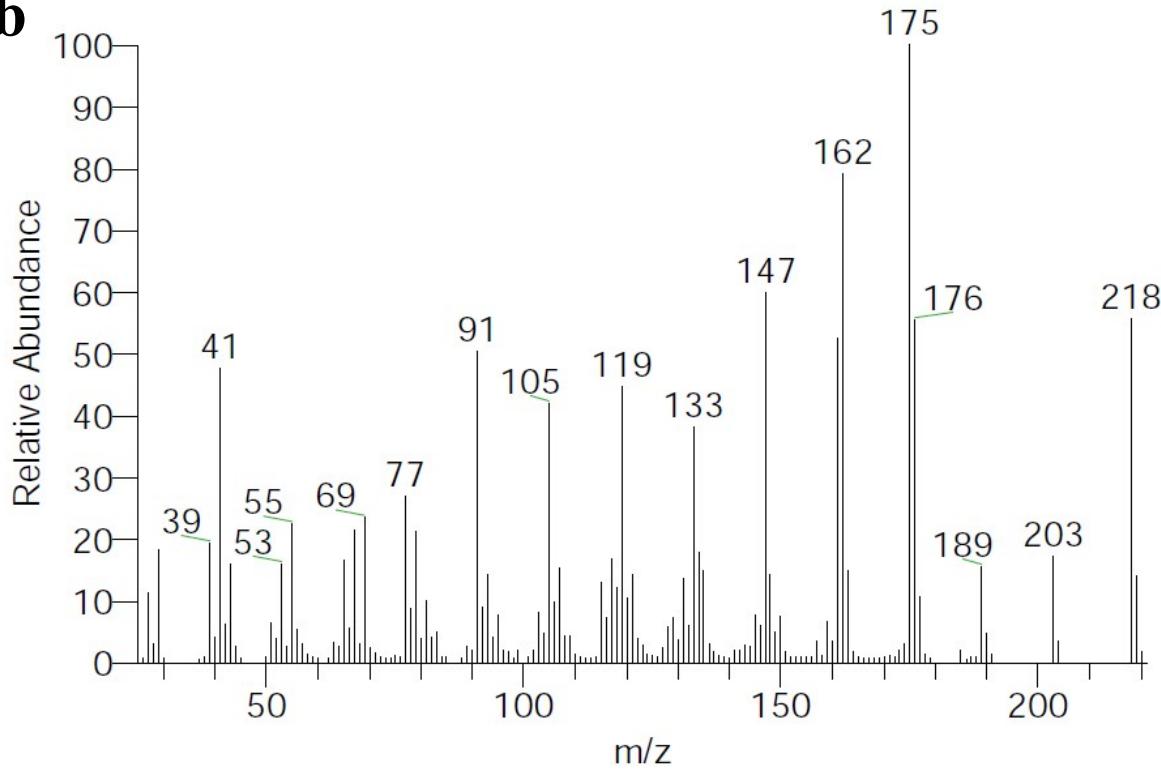
**Figure S3.** FT-IR spectra of  $\text{Zn}_5(\text{OH})_8(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$ , and  $\text{Zn}_5(\text{OH})_8(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$  after addition of TPA, Hmim, and the final product TPA@ZIF-8.



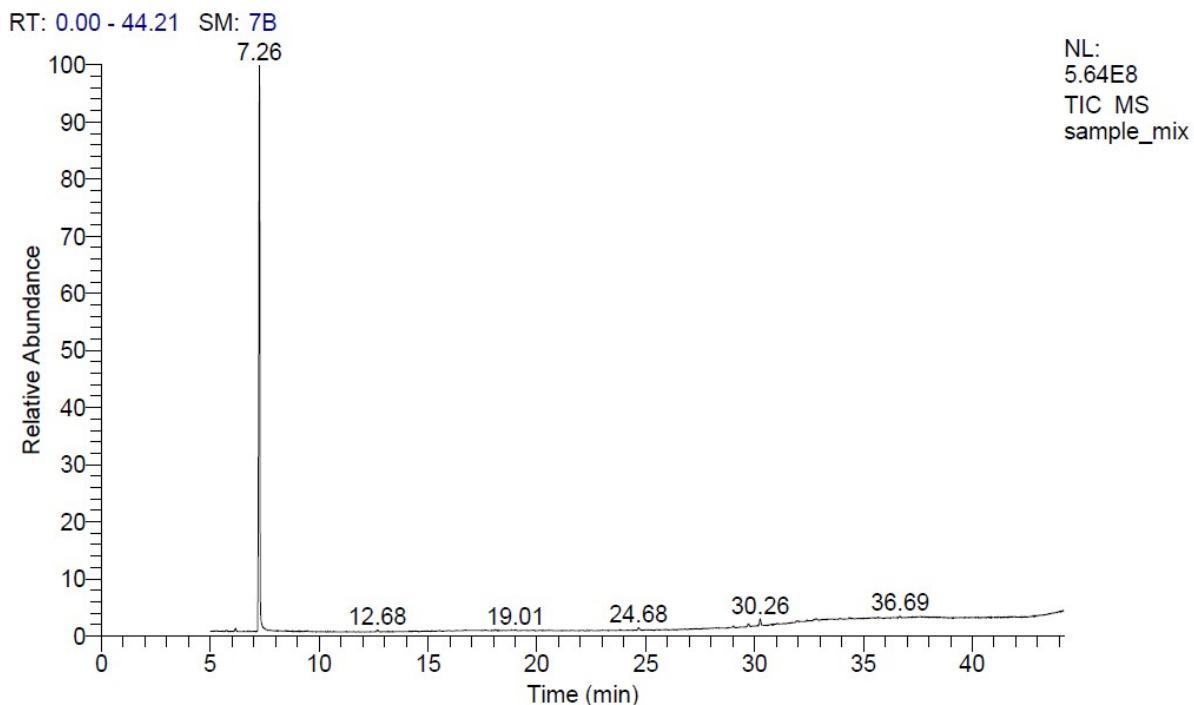
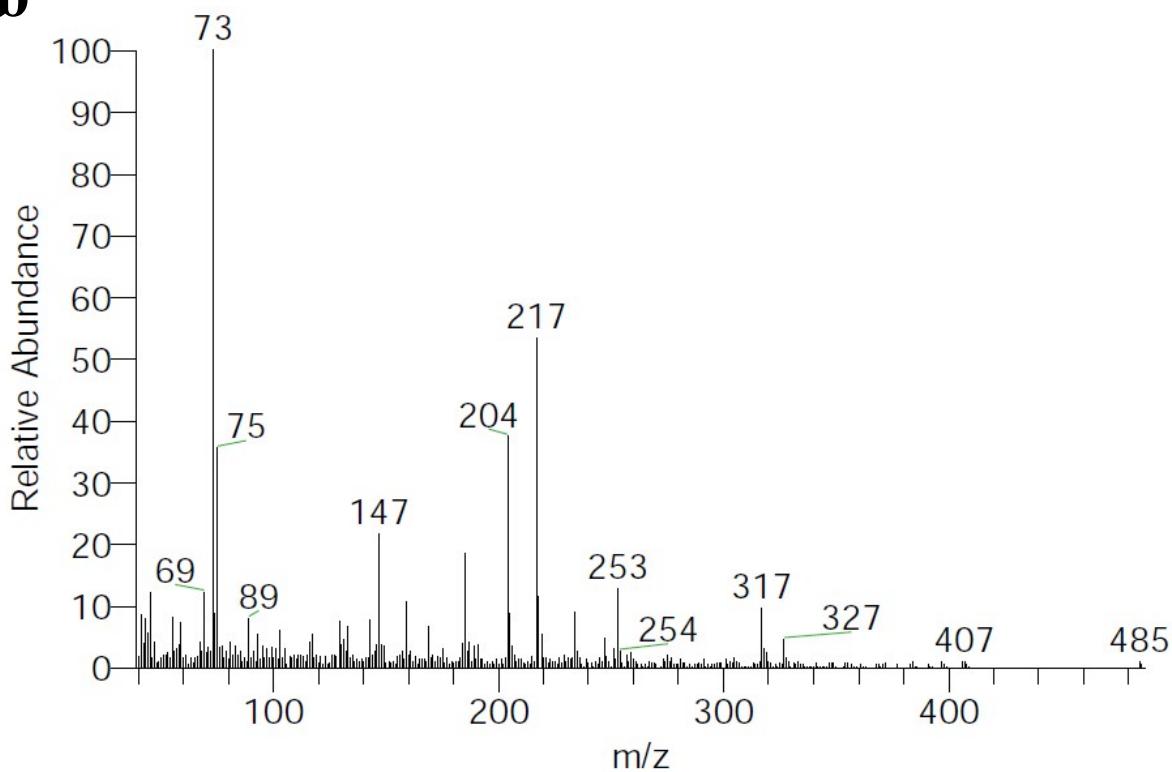
**Figure S4.** FT-IR spectrum of TPA@ZIF-8 in the range of 400-1700 cm<sup>-1</sup>.

**a****b**

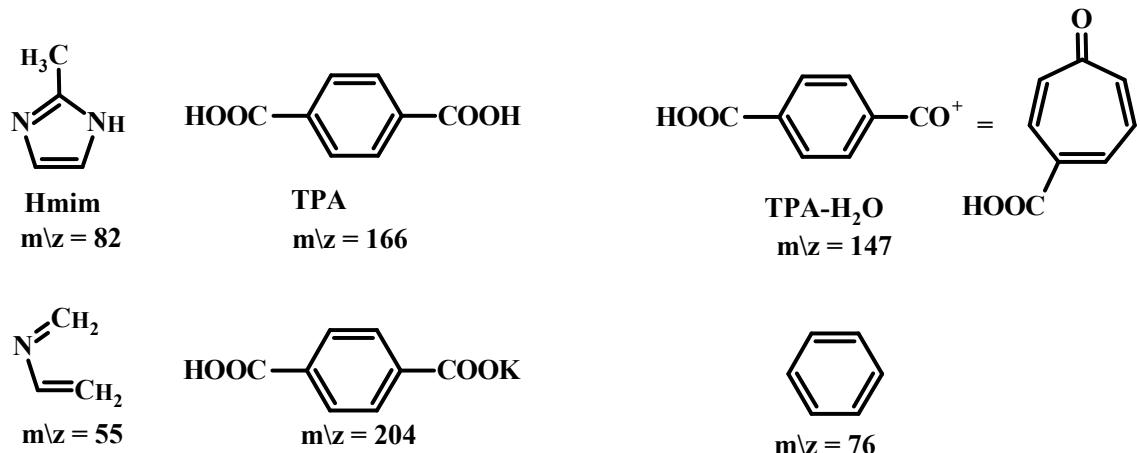
**Figure S5.** a) GC chromatogram and b) mass spectrum for Hmim solution. Mass spectrum (b) represents the peak at retention time of 7.26 min in the chromatogram (b). The assignment for some of the peaks in the mass spectrum was assigned in Figure S8.

**a****b**

**Figure S6.** a) GC chromatogram and b) mass spectrum for TPA@ZIF-8 after digestion using HCl and extraction using CHCl<sub>3</sub>.

**a****b**

**Figure S7.** a) GC chromatogram and b) mass spectrum for TPA@ZIF-8 after digestion and extraction and the spike of Hmim solution as internal standard solution.



**Figure S8.** Chemical structure of some of the peaks observed in the mass spectra in Figure 5-7.