

Electronic Supporting Information

Novel mixed matrix membranes with Indium based 2D and 3D MOFs as fillers and polysulfone for CO₂/CH₄ mixed gas separation

Aditya Jonnalagedda, Bhanu Vardhan Reddy Kuncharam*

Department of Chemical Engineering,
Birla Institute of Technology & Science, Pilani, Pilani Campus
Rajasthan, 333031, India

*Corresponding author:

Prof. Bhanu Vardhan Reddy Kuncharam,
Associate Professor, Department of Chemical Engineering,
Birla Institute of Technology and Science, Pilani, Pilani, Rajasthan, India
Phone: +91-1596255839
Email: bhanu.vardhan@pilani.bits-pilani.ac.in

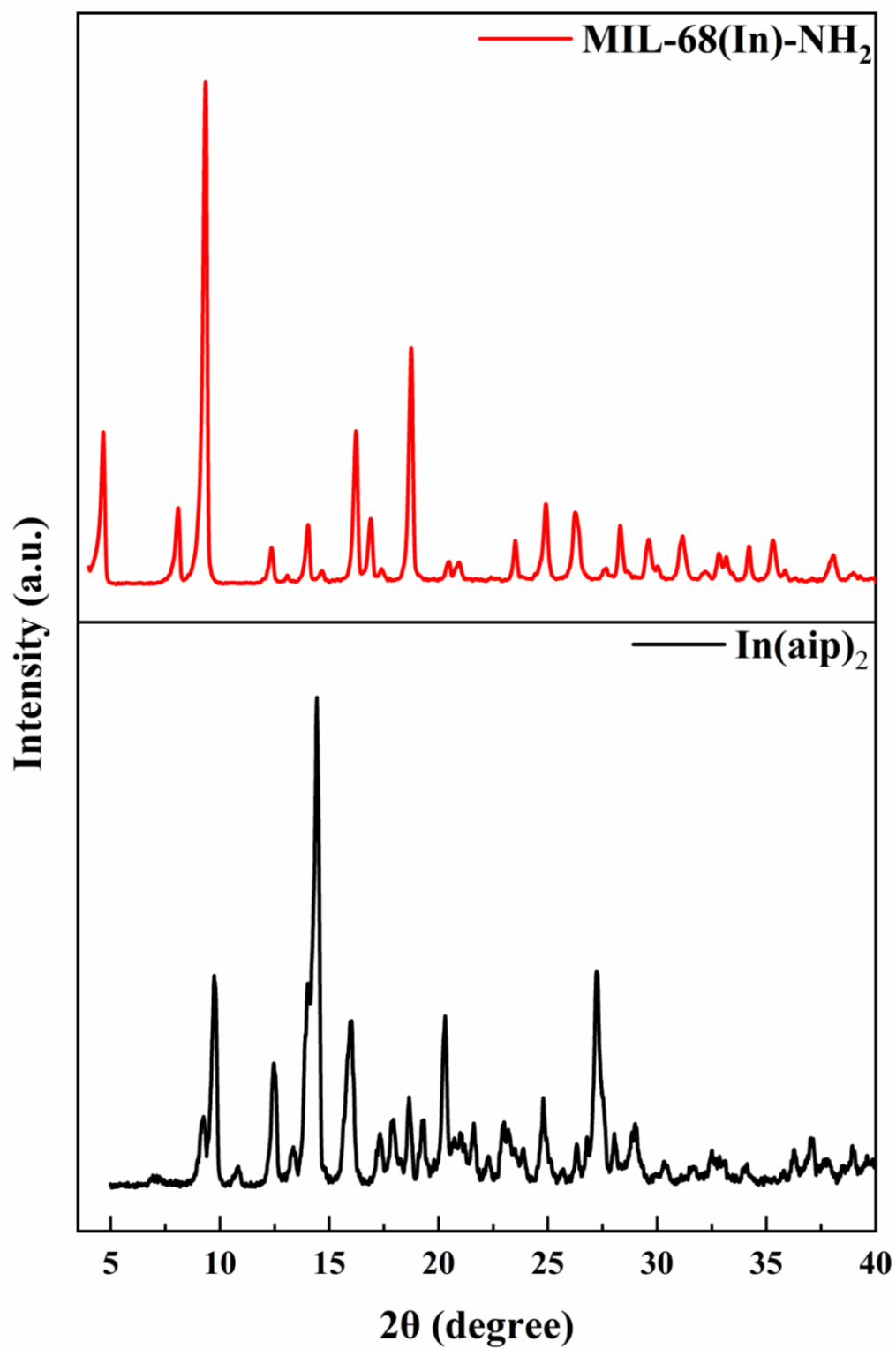


Figure S1. XRD of a) MIL-68(In)-NH₂, b) In(aip)₂ for stability.

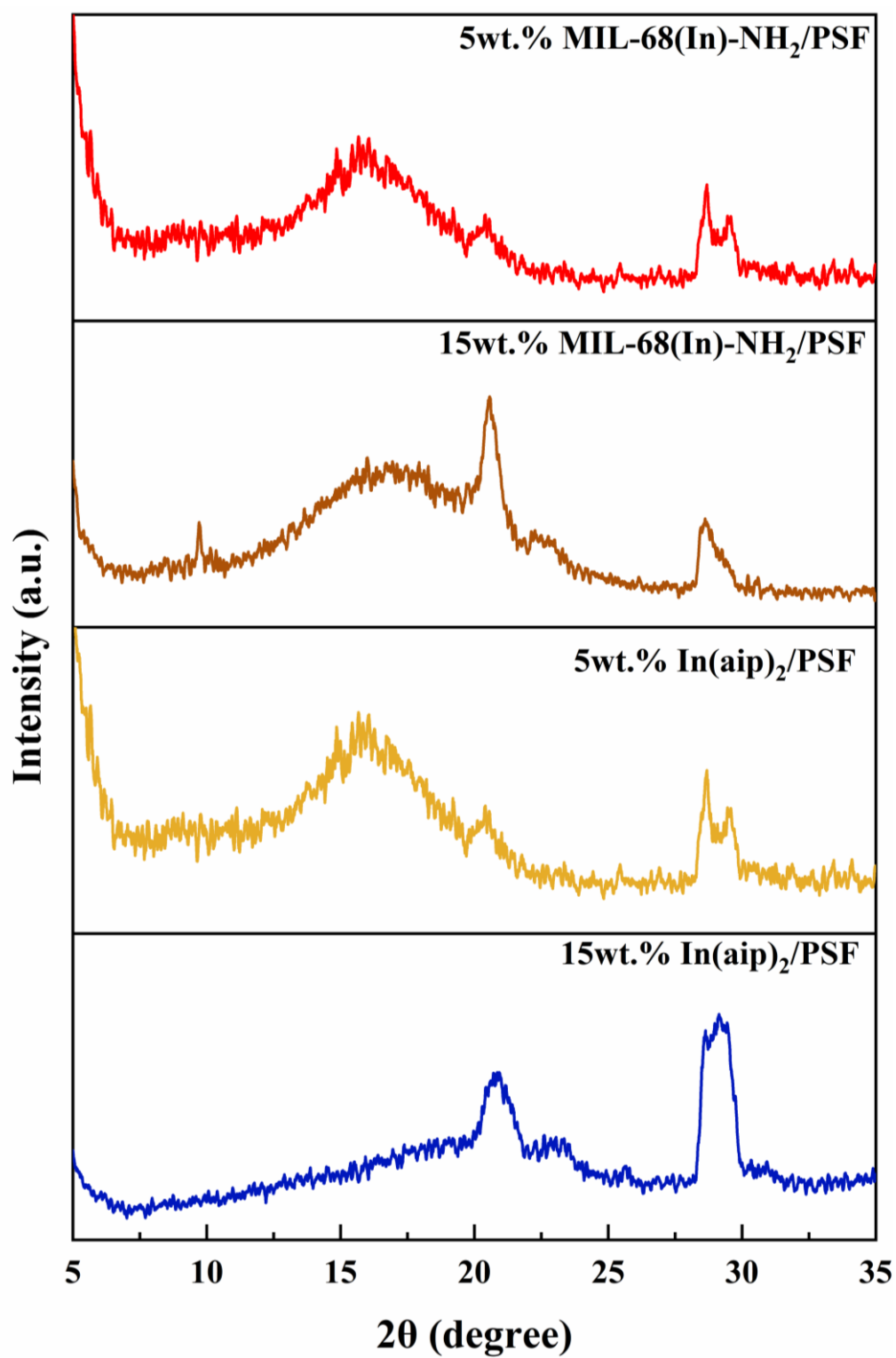


Figure S2. XRD of MMMs

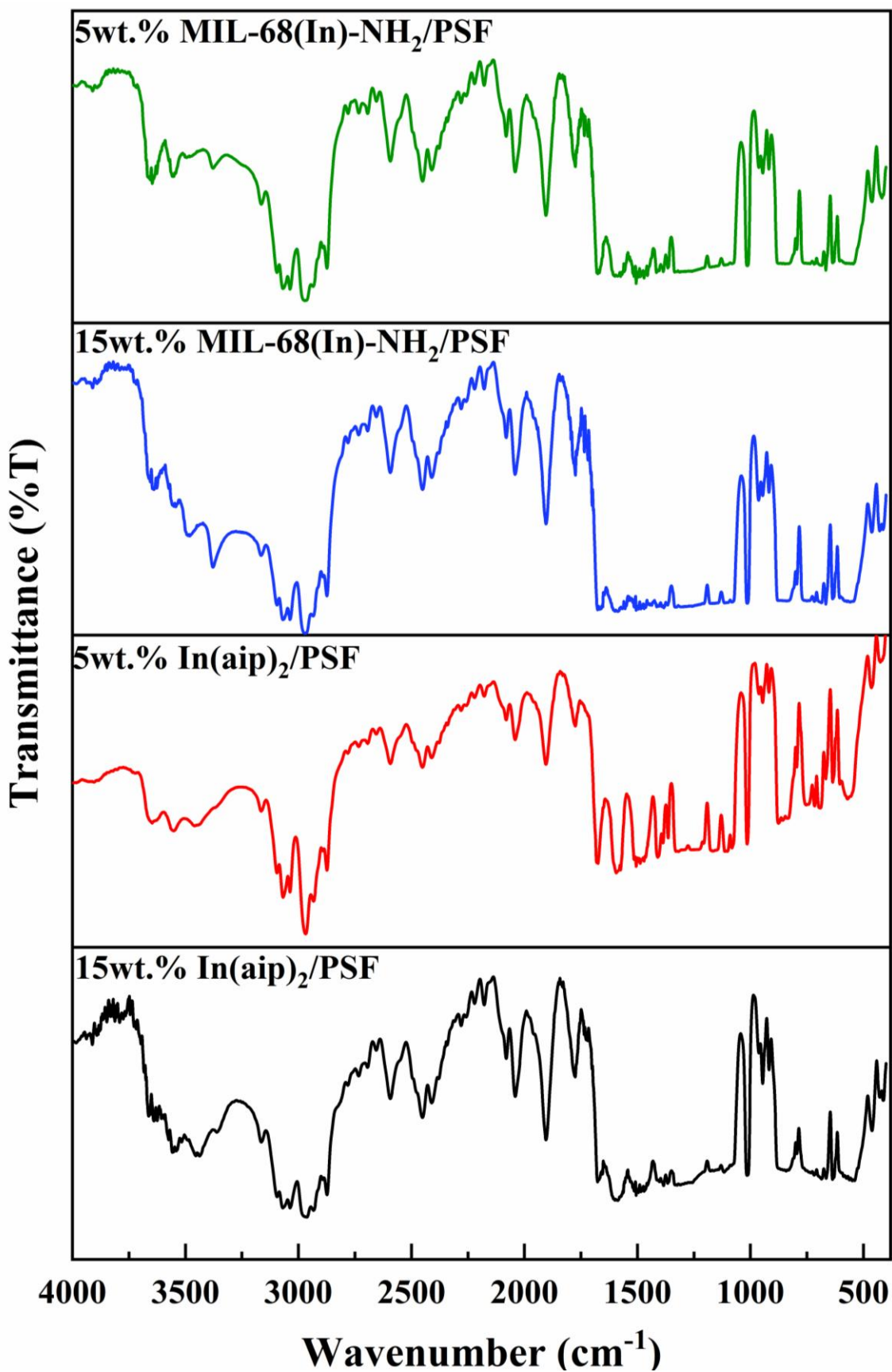


Figure S3. FTIR of MMMs

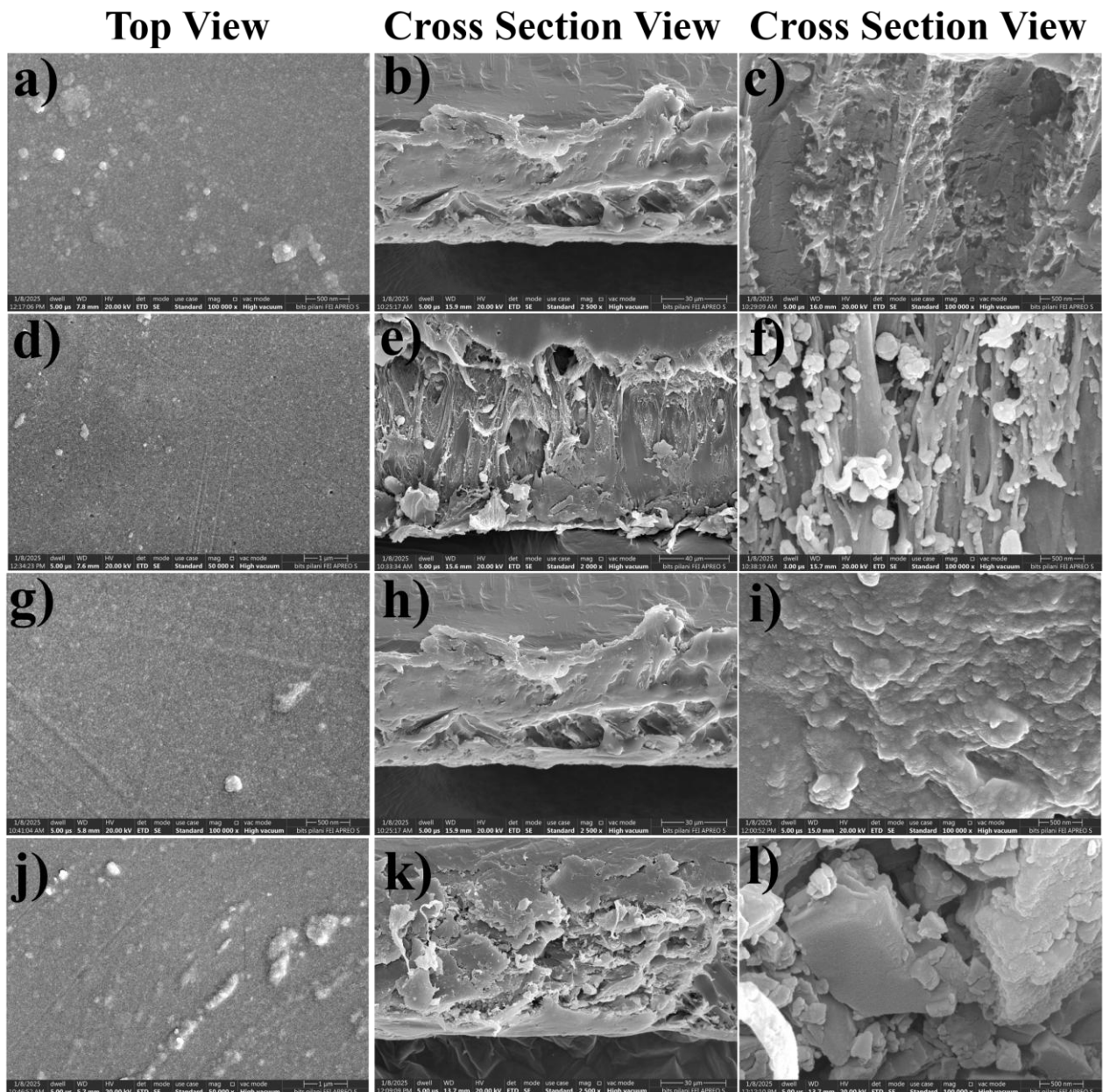


Figure S4. FESEM images of MMMs (a, b, c) 5wt.% MIL-68-NH₂/PSF, (d, e, f) 15wt.% MIL-68-NH₂/PSF, (g, h, i) 5wt.% In(aip)₂/PSF MMM, (j, k, l) 15wt.% In(aip)₂/PSF MMM.

Table S1. T_g of MMMs

MMM	Glass Transition Temperature- T _g (°C)
5wt.% MIL-68(In)-NH ₂ /PSF	180.5 ± 0.7
15wt.% MIL-68(In)-NH ₂ /PSF	182.6 ± 0.3
5wt.% In(aip) ₂ /PSF	179.8 ± 0.6
15wt.% In(aip) ₂ /PSF	182.4 ± 0.5

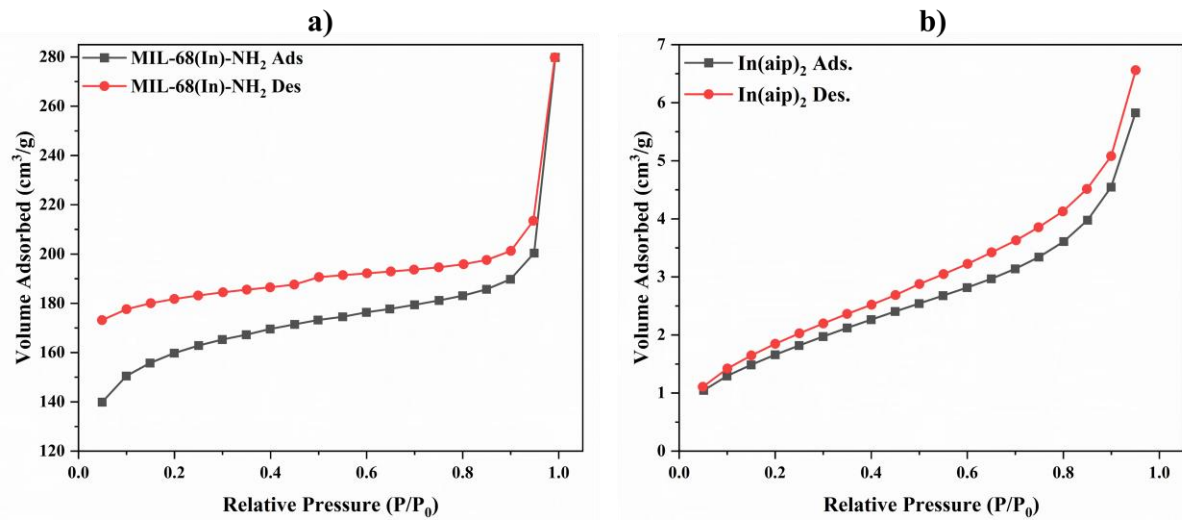


Figure S5. N_2 adsorption and desorption isotherms of a) MIL-68(In)-NH₂ and b) In(aip)₂ samples at 77 K.

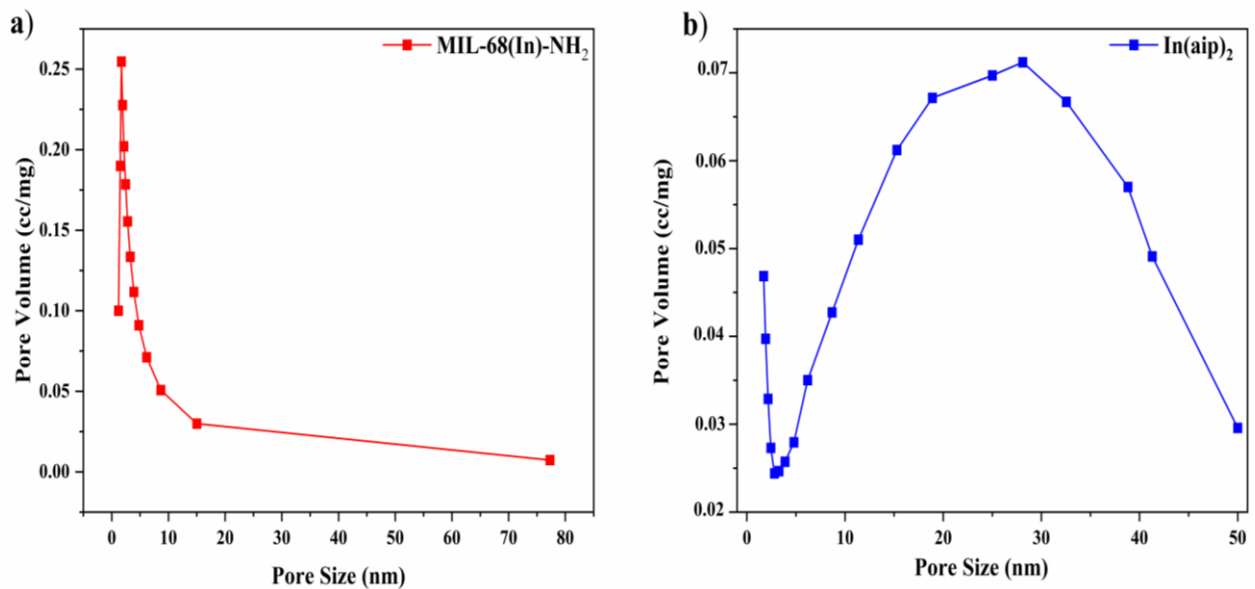


Figure S6. Pore distribution curves of a) MIL-68(In)-NH₂, b) In(aip)₂