

Electronic Supplementary Information (ESI)

Vapor phase sensing of ammonia at sub-ppm level using perylene diimide thin film device

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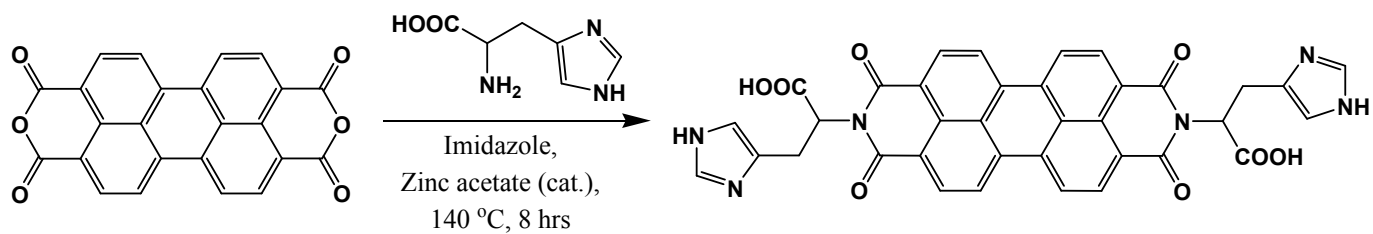
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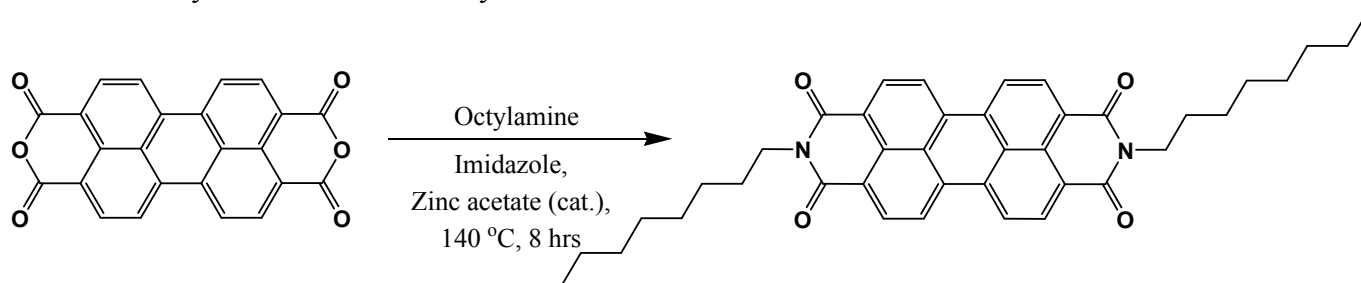
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1. Synthetic Scheme:

Scheme S1. Synthesis of PDI-HIS



Scheme S2. Synthesis of PDI-n-Octyl



2. ^1H -NMR spectra of PDI-HIS

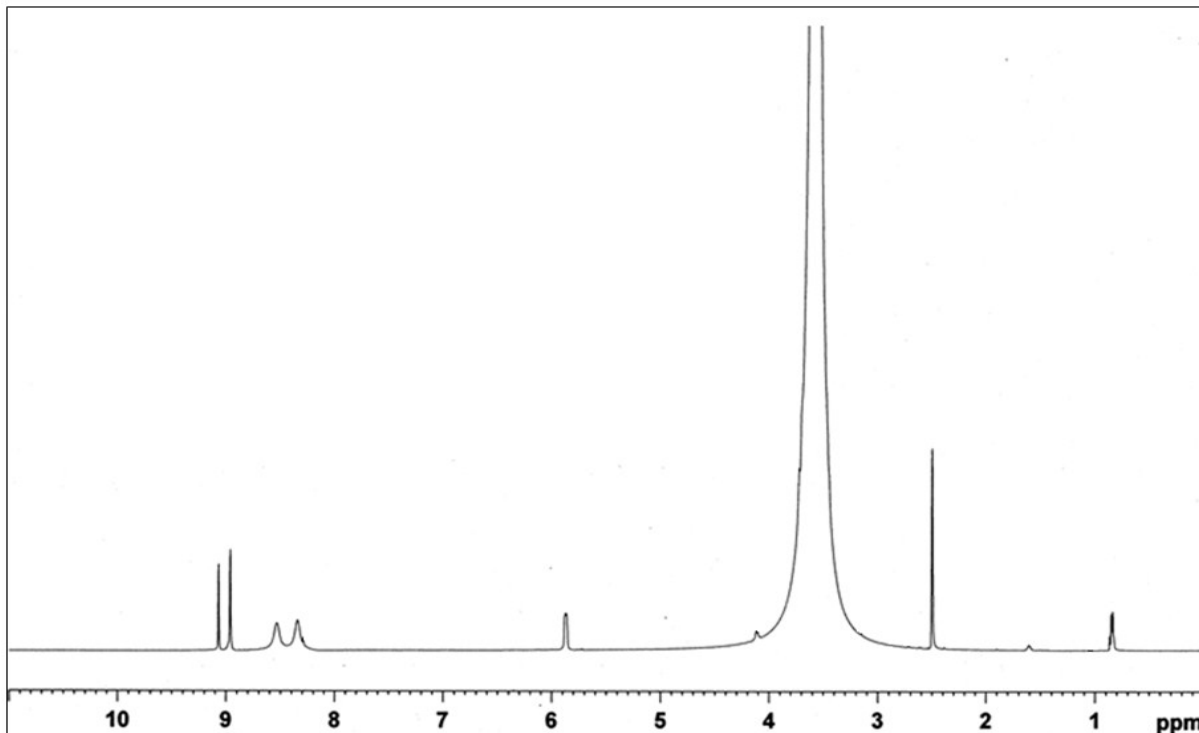


Fig. S1. ^1H -NMR Spectra of PDI-HIS in $\text{DMSO}-d_6$ (600 MHz)

3. ^{13}C -NMR spectra of PDI-HIS

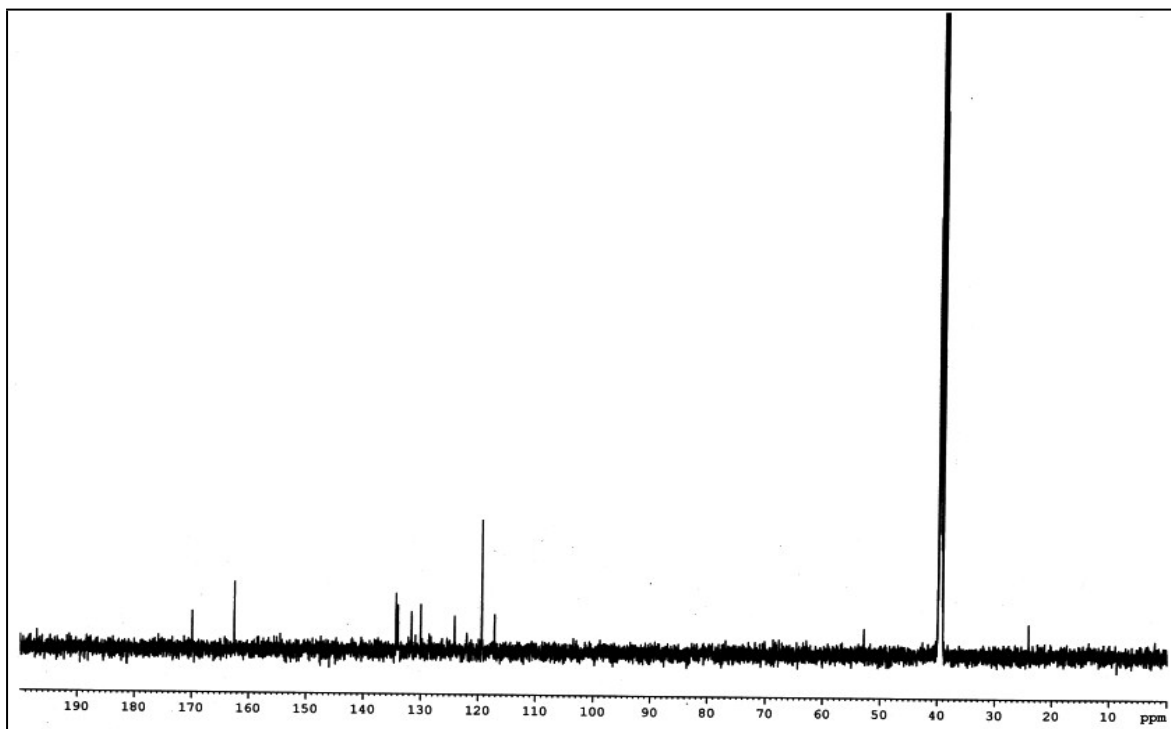


Fig. S2. ^{13}C -NMR Spectra of PDI-HIS in $\text{DMSO}-d_6$ (150 MHz)

4. Mass spectra of PDI-HIS

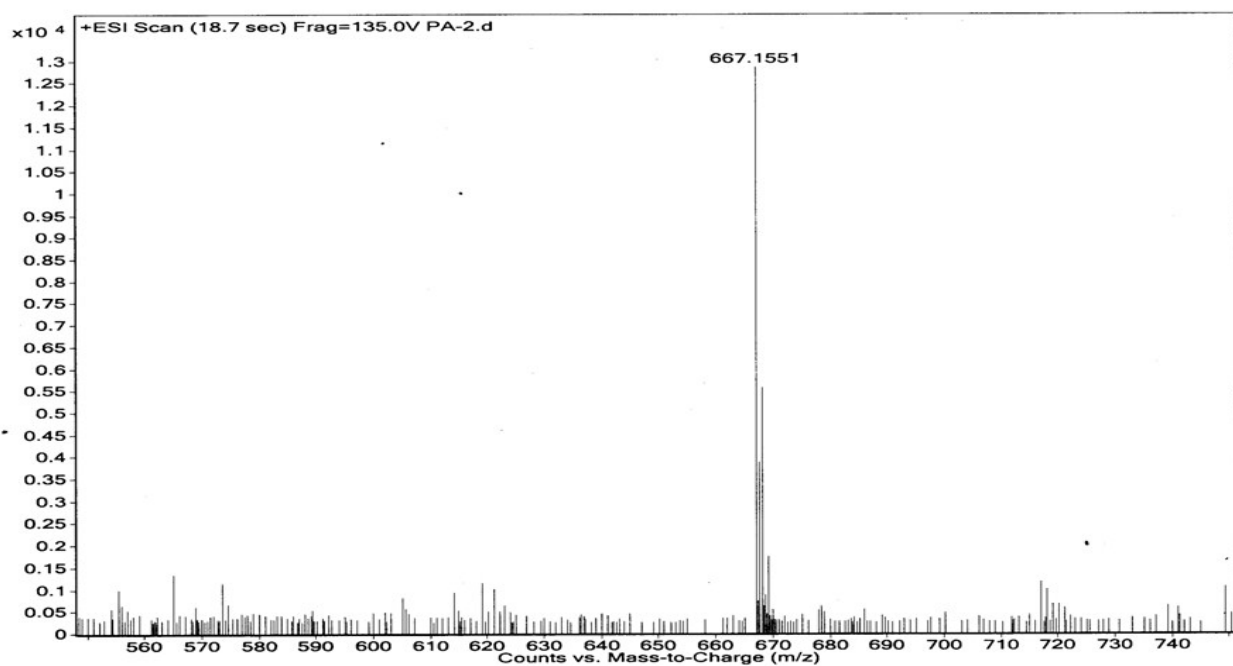


Fig. S3. ESI-MS spectra of PDI-HIS.

5. ^1H -NMR spectra of PDI-n-Octyl

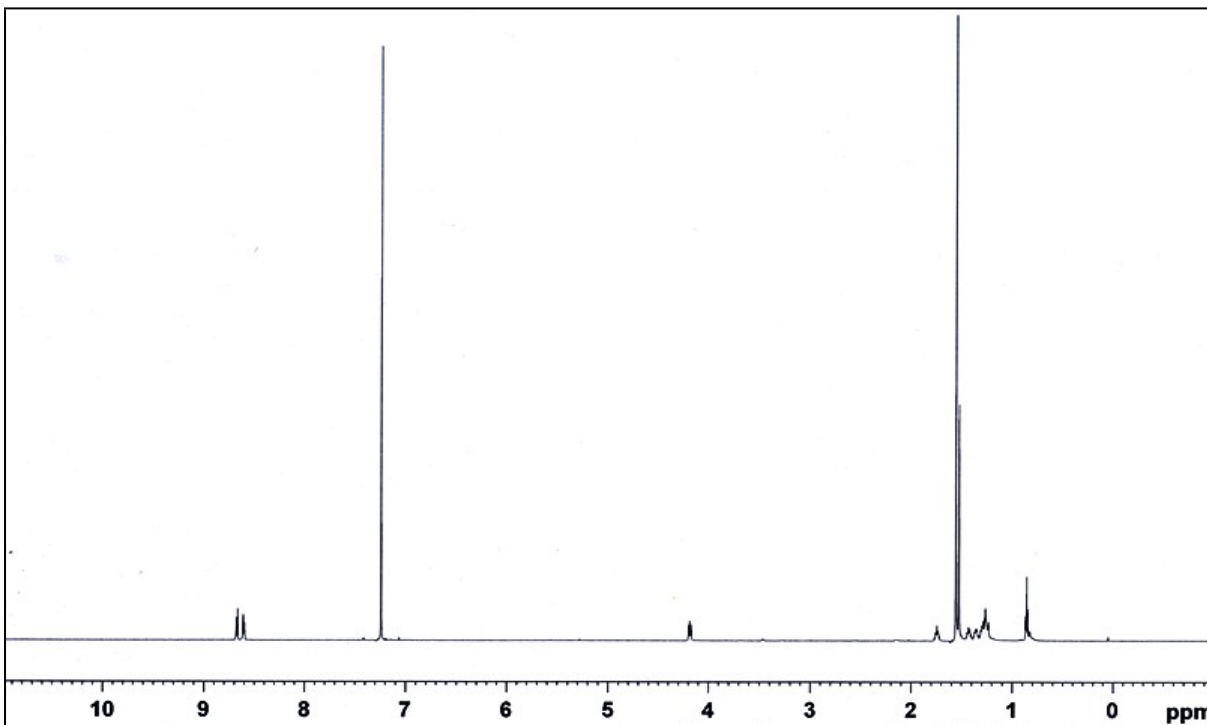


Fig. S4. ^1H -NMR Spectra of PDI-n-Octyl in CHCl_3 (600 MHz)

6. I-V curve of PDI-n-Octyl

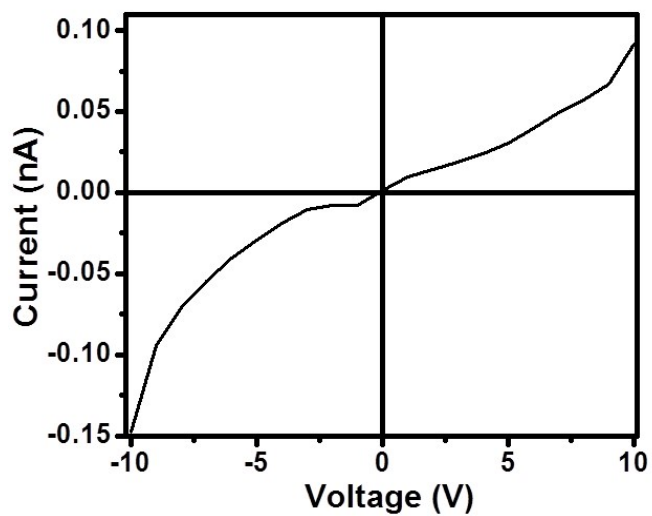


Fig. S5. I-V characteristic of PDI-n-Octyl

7. Effect of humidity on sensing

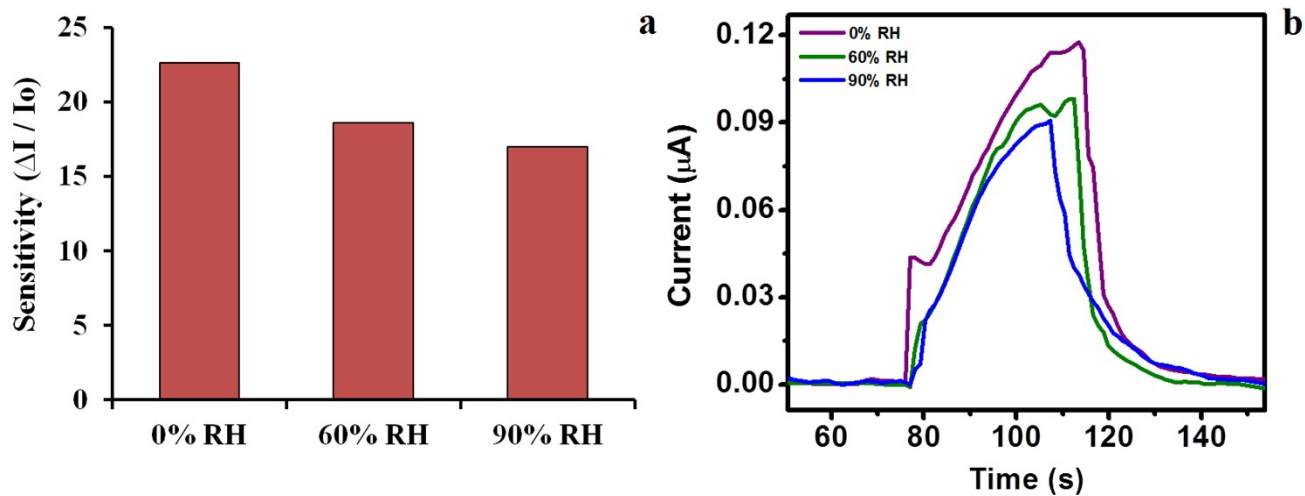


Fig. S6 Current response with 0%, 60% and 90% relative humidity(RH) level

8. Effect of film thickness on sensing

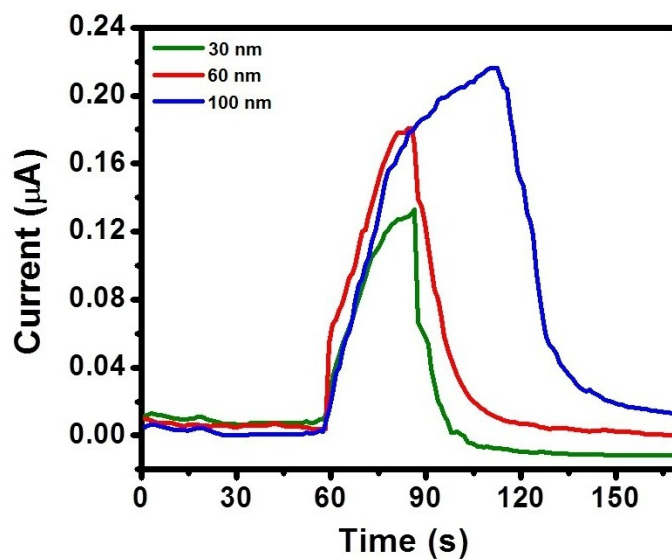


Fig. S7 Current response observed after exposing 100 ppm NH_3 in three different devices with film thicknesses of 30, 60 and 100 nm, respectively.

9. FT-IR studies

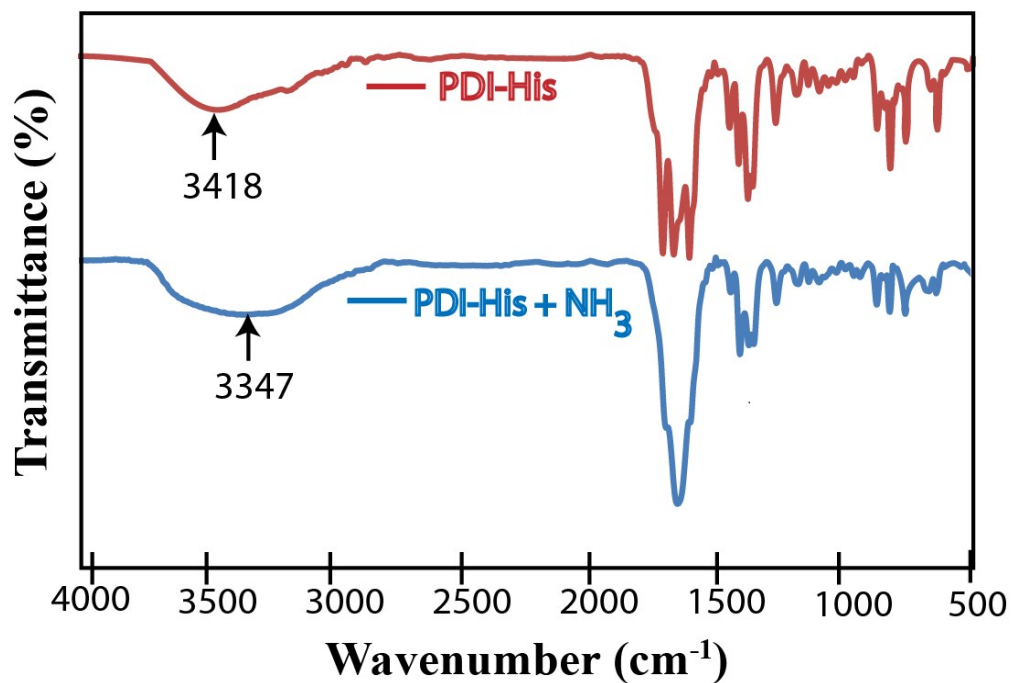


Fig. S8 FT-IR spectra of PDI-HIS before and after exposure of NH_3 vapors.

10. Sensing study of PDI-n-Octyl

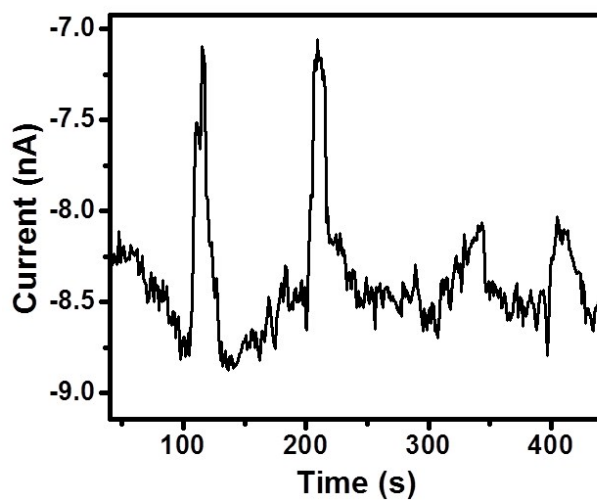


Fig. S9. Sensing study of PDI-n-Octyl with 1000 ppm of NH_3