

## Length-Dependent Thermal Transport in One-Dimensional Self-Assembly of Planar $\pi$ -Conjugated Molecules

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### Electronic Supplementary Information:

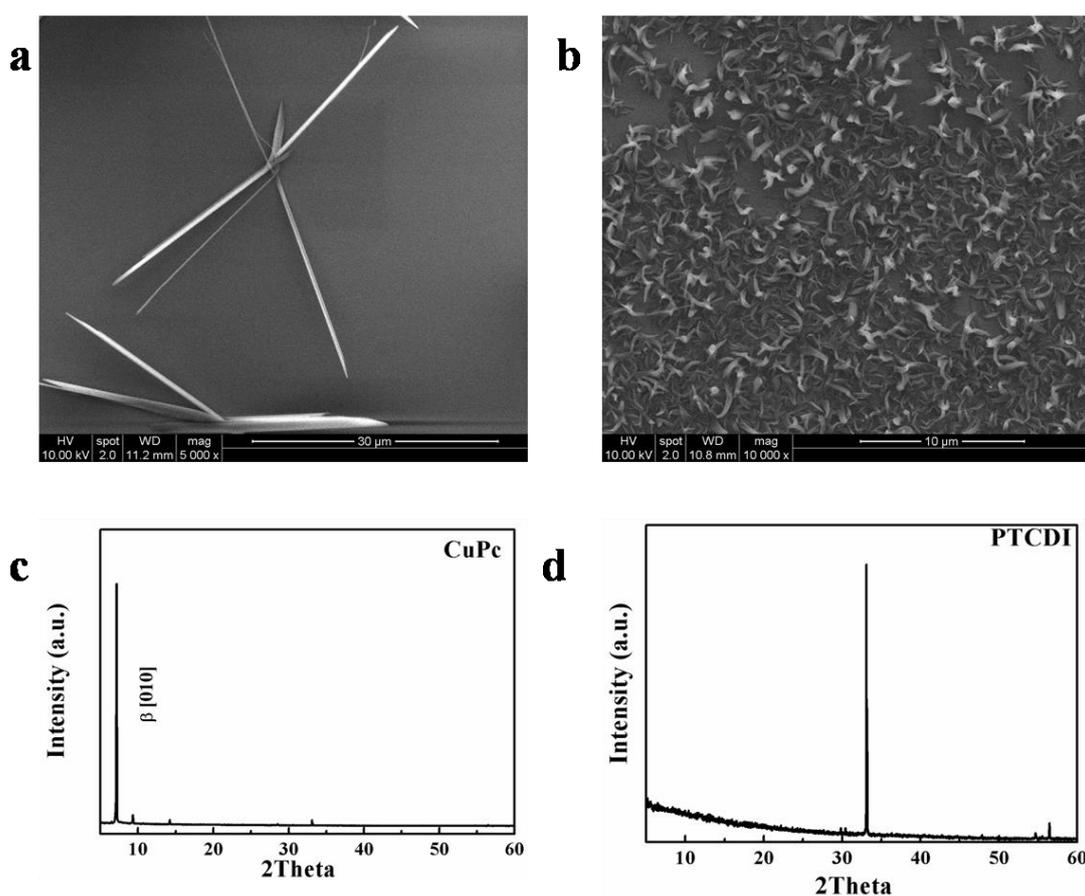


Figure S1. The SEM images of CuPc (a) and PTCDI (b) nanoribbons synthesized by the physical vapor deposition method. Powder XRD patterns of CuPc (c) and PTCDI (d) nanoribbons.

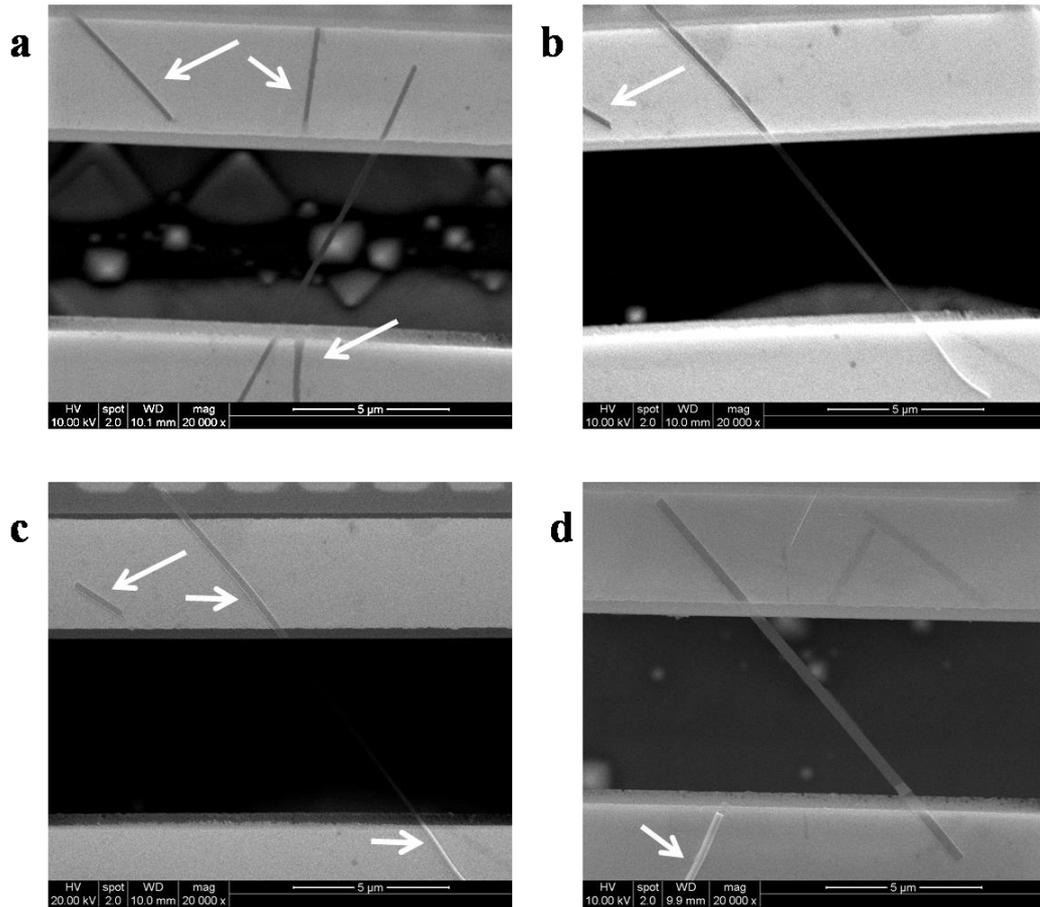


Figure S2. CuPc remnants left on the Pt electrodes (pointed by arrows) after removing the CuPc nanoribbon from the device.

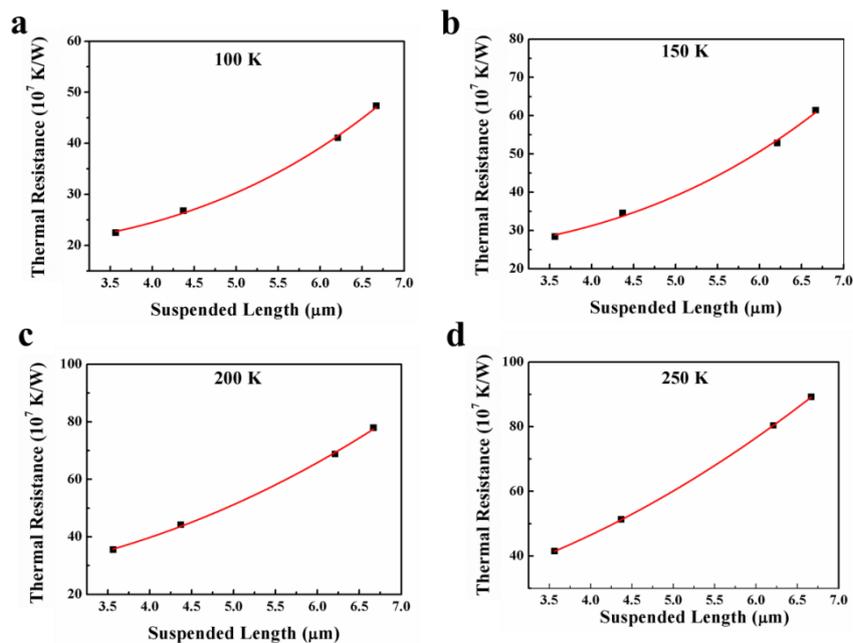


Figure S3. The measured thermal resistance vs. the suspended length (black squares) and the best fitting curve (red solid line) for Sample 1 at 100 K, 150 K, 200 K, and 250 K. For the

whole measurement temperature range, the best fitting curve gives negative values for  $b$  ranging from -2.0 to -0.9.

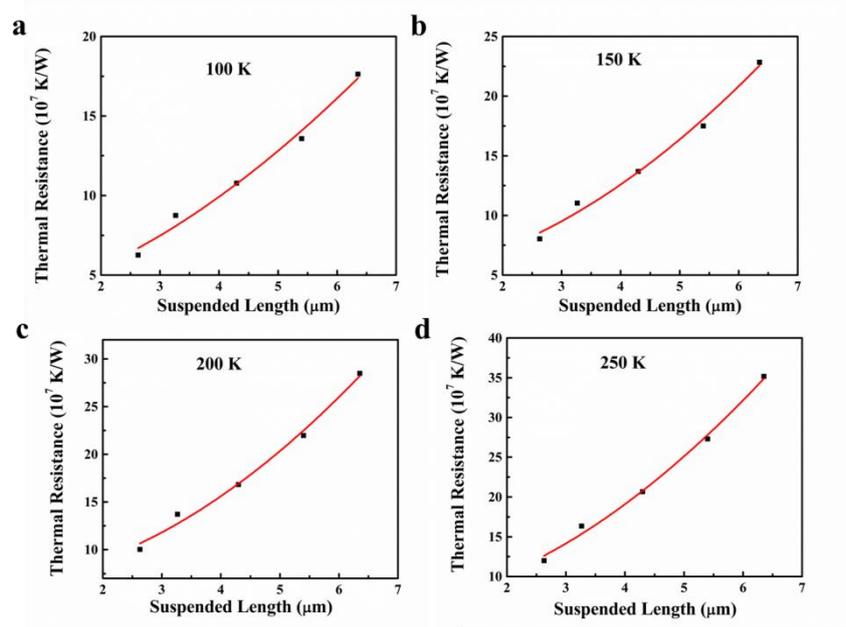


Figure S4. The measured thermal resistance vs. the suspended length (black squares) and the best fitting curve (red solid line) for Sample 2 at 100 K, 150 K, 200 K, and 250 K. For the whole measurement temperature range, the best fitting curve gives negative values for  $b$  ranging from -0.89 to -0.67.

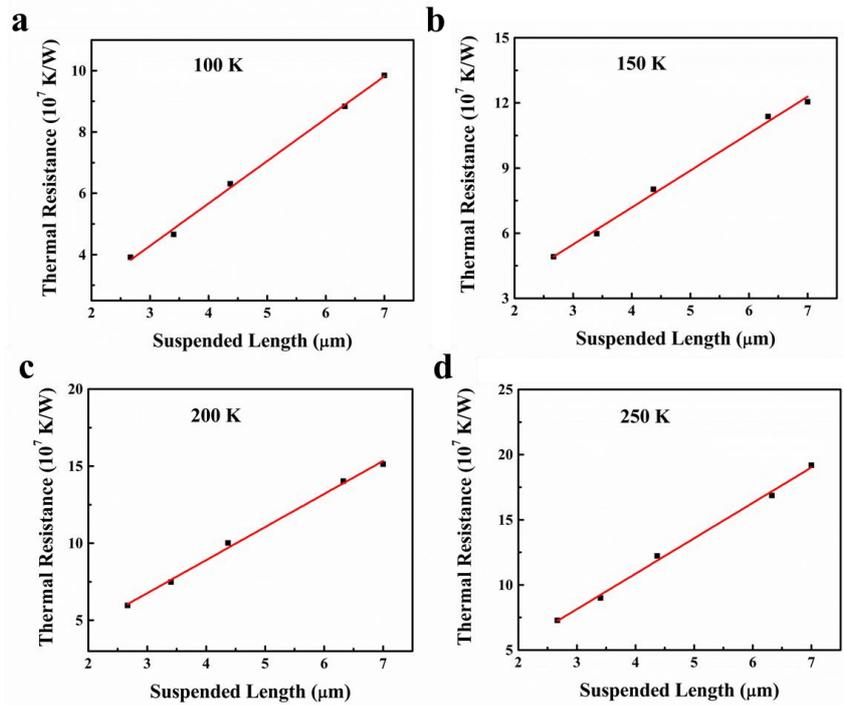


Figure S5. The measured thermal resistance vs. the suspended length (black squares) for Sample 3 at 100 K, 150 K, 200 K, and 250 K. The linear fitting curve (red solid line) can fit the experimental data very well, suggesting that the normal diffusion process dominates thermal transport in Sample 3.

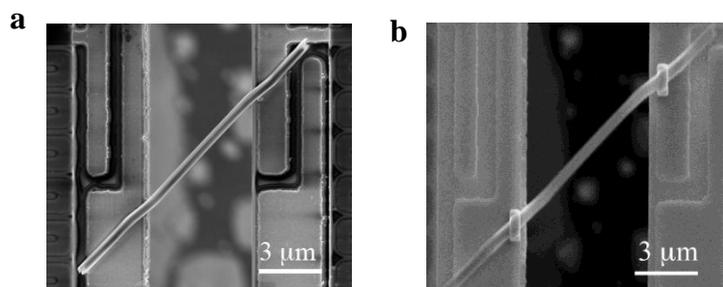


Figure S6. The SEM images of a PTCDI nanoribbon taken before (a) and after (b) the deposition of the Pt/C composites at contacts by EBID.