

Growing uniform copolymer nanowire arrays for high stability and efficient field emission

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We present a novel platform to study the formation of two p-conjugated conducting copolymer nanowire arrays based on 3,4-ethylenedioxythiophene (EDOT) and thieno[3,4-b]thiophene (T34bT). The resulting nanostructures have a highly uniform wire array architecture with tunable diameters. This combination of nanoporous templates and in situ electropolymerization strategy offers a versatile route to prepare copolymers, forming uniform one-dimensional nanomaterials potentially useful in electronic conductor and field emission applications.

- 1) Guo, Y.; Tang, Q.; Liu, H.; Zhang, Y.; Li, Y.; Hu, W. P.; Wang, S.; Zhu, D. *J. Am. Chem. Soc.* **2008**, 130, 9298-9299.
- 2) Gan, H.; Liu, H.; Li, Y.; Zhao, Q.; Wang, S.; Jiu, T.; Wang, N.; He, X.; Yu, D.; Zhu, D. *J. Am. Chem. Soc.* **2005**, 127, 12452-12453.
- 3) Cui, S.; Li, Y.; Guo, Y.; Liu, H.; Song, Y.; Xu, J.; Lv, J.; Zhu, M.; Zhu, D. *Adv. Mater.* **2008**, 20, 309-313.
- 4) Cui, S.; Liu, H.; Gan, L.; Li, Y.; Zhu, D. *Adv. Mater.* **2008**, 20, 2918-2925.
- 5) Zheng, H. Y.; Li, Y. J.; Liu, H. B.; Li, Y. L. *Chem. Soc. Rev.* **2011**, 40, 4506-4524.
- 6) Liu, H. B.; Xu, J. L.; Li, Y. J.; Li, Y. L. *Acc. Chem. Res.* **2010**, 43, 1496.
- 7) Liu, H. B.; Zuo, Z. C.; Guo, Y. B.; Li, Y. J.; Li, Y. L. *Angew. Chem. Int. Ed.* **2010**, 49, 2705.
- 8) Huang, C. S.; Li, Y. L.; Song, Y. L.; Li, Y. J.; Liu, H. B.; Zhu, D. B. *Adv. Mater.* **2010**, 22, 3532.