

## Well-defined Graphene-based Hybrids for Energy Storage Applications

Linjie Zhi, Bin Luo, Bin Wang

National Center for Nanoscience and Technology, Beiyitia 11, Zhongguancun, Beijing, 100190, P. R.

[zhilj@nanoctr.cn](mailto:zhilj@nanoctr.cn)

**Abstract:** The preparation of high performance electrode materials is critically important for the development of powerful batteries. Graphene-based materials have attracted great attention recently as electrode in various energy storage devices, including lithium ion batteries and supercapacitors. However, the rational control of the structures and functions of the material is always a big challenge. In this work, graphene-based materials with well-defined structures and functions, such as the graphene/SnXn nanocomposites with rationally designed interfaces, the graphene/Si nanocomposites with systematic structure control, have been developed by the rational design of various chemical approaches. Interestingly, the rational design of structures and functions of the electrode material provides efficient strategies for the development of high performance materials in lithium ion batteries.

### References

- [1] Z Fan, J Yan, L Zhi, Q Zhang, T Wei, J Feng, M Zhang, W Qian, F Wei, *Adv. Mater.* **2010**, 22, 3723.
- [2] S Yang, X Feng, L Zhi, Q Cao, J Maier, K Müllen, *Adv. Mater.* **2010**, 22, 838.
- [3] B Luo, Y Fang, B Wang, J Zhou, H Song, and L Zhi, *Energy Environ. Sci.* **2012**, 5, 5226.
- [4] B Luo, B Wang, X Li, Y Jia, M Liang, L Zhi, *Adv. Mater.*, **2012**, 24, 3538.
- [5] B Wang, B Luo, X Li, L Zhi, *Mater. Today*, **2012**, 15(12), 544-552.
- [6] B Luo, B Wang, X Li, Y Jia, M Liang, L Zhi, *Adv. Mater.*, **2012**, 24, 3538-3543.
- [7] B Wang, X Li, X Zhang, B Luo, Y Zhang, L Zhi, *Nano Lett.* **2013**, 13, 5578-5584.
- [8] B Wang, X Li, X Zhang, B Luo, Y Zhang, L Zhi, *Adv. Mater.*, **2013**, 25, 3560-3565.

