



Wu Jishan

PhD 2004 (Max Planck Institute for Polymer Research)

Project leader 2004-2005 (Max Planck Institute for Polymer Research)

Postdoc 2005-2007 (University of California at Los Angeles)

Assistant professor

Department of Chemistry, National University of Singapore

3 Science drive 3, Singapore 117543

Phone: 6516 2677 Office: S7-03-03

E-mail : chmwuj@nus.edu.sg

MAJOR RESEARCH INTERESTS

Research work in our group is focused on the molecular engineering of organic electronic/optoelectronic materials and supramolecular responsive materials. The research mainly covers the following two areas:

1. Novel functional π -conjugated systems such as polymers, oligomers, dendrimers and polycyclic aromatic hydrocarbons (PAHs) with unique electronic / optical properties. Their self-assembly in thin films and their applications in electronic devices such as FETs and solar cells.
2. Supramolecular chemistry and materials: (a) synthesis of challenging supramolecular architectures such as polyrotaxanes, polycatenanes, molecular necklaces, rotaxane dendrimers etc.; (b) design of novel molecular switches and machines and their applications for drug delivery, artificial muscles and gene delivery.

RECENT PUBLICATIONS

1. **J. Wu**, W. Pisula, K. Müllen, "Graphene Molecules as Potential Material for Electronics", *Chem. Rev.*, **2007**, *107*, 718-743.
2. **J. Wu**, K. C. F. Leung, J. F. Stoddart, "Efficient Production of [n]Rotaxanes Using Template-directed Clipping Reactions", *Proc. Nat. Acad. Sci. (USA)*, **2007**, in press.
3. **J. Wu**, K. Müllen, "All-benzenoid Polycyclic Aromatic Hydrocarbons: Synthesis, Self-assembly and Applications in Organic Electronics", chapter in the book "Carbon-Rich Compounds: From Molecules to Materials", **2006**, Wiley-VCH, 90-139.
4. **J. Wu**, M. D. Watson, K. Müllen etc. "Hexakis(4-iodophenyl)-peri-hexabenzocoronene- A Versatile Building Block for Highly Ordered Discotic Liquid Crystalline Materials", *J. Am. Chem. Soc.*, **2004**, *126*, 177.
5. **J. Wu**, M. Baumgarten, M. G. Debije, J. M. Warman, K. Müllen, "Arylamine -substituted Hexa-peri-hexabenzocoronenes: Facile Synthesis and Their Potential Application As Coaxial Hole Transporting Materials", *Angew. Chem. Int. Ed.*, **2004**, *43*, 5331.
6. **J. Wu**, A. Fechtenkötter, J. Gauss, M. D. Watson, M. Wagner, K. Müllen, "Controlled Self-assembly of Hexa-peri-hexabenzocoronene in Solution", *J. Am. Chem. Soc.*, **2004**, *126*, 11311.
7. **J. Wu**, M. D. Watson, K. Müllen, "The Versatile Synthesis and Self-assembly of Star-Type Hexabenzocoronenes", *Angew. Chem. Int. Ed.*, **2003**, *42*, 5329.
8. **J. Wu**, J. Li, U. Kolb, K. Müllen, "A water-soluble hexa-peri-hexabenzocoronene: synthesis, self-assembly and role as template for porous silica with aligned nanochannels", *Chem. Commun.*, **2006**, 48.
9. **J. Wu**, B. E. Hamaoui, J. Li, L. Zhi, U. Kolb, K. Müllen, "High Yielding Synthesis of 'Bamboo-like' and Straight Carbon Nanotubes By Thermolysis of Hexa-peri-hexabenzocoronene-Cobalt Complexes in the Solid-state", *Small*, **2005**, *1*, 210.
10. **J. Wu**, M. D. Watson, N. Tchebotareva, Z. Wang, and K. Müllen, "Oligomers of Hexa-peri-hexabenzocoronene as Super'oligophenylene': Synthesis, Electronic Properties and Self-assembly", *J. Org. Chem.*, **2004**, *69*, 8194.
11. **J. Wu**, Ž. Tomović, V. Enkelmann, K. Müllen, "From Branched Hydrocarbon Propellers to Three-fold Symmetric Graphite Discs", *J. Org. Chem.*, **2004**, *69*, 5179.
12. **J. Wu**, L. Gherghel, M. D. Watson, J. Li, Z. Wang, C. D. Simpson, U. Kolb, K. Müllen, "From Branched Polyphenylenes to Graphite Ribbons", *Macromolecules*, **2003**, *36*, 7082.
13. L. Zhi, **J. Wu**, J. Li, K. Müllen, "Carbonization of Disc-like Molecules in Porous Alumina Membranes: Toward Carbon Nanotubes with Controlled Graphene Layer Orientation" *Angew. Chem. Int. Ed.*, **2005**, *44*, 2120.
14. X. Feng, **J. Wu**, M. Ai, L. Zhi, J. P. Rabe, K. Müllen, "Triangle-shaped Polycyclic Aromatic Hydrocarbons", *Angew. Chem. Int. Ed.* **2007**, *46*, 3033.
15. F. Jäckel, M. Ai, **J. Wu**, K. Müllen, J. P. Rabe, "Complex Epitaxial Layers Comprising Conjugated Molecular Stars and Solvent at Solid-Liquid Interfaces", *J. Am. Chem. Soc.*, **2005**, *127*, 12792.
16. B. El Hamaoui, L. Zhi, **J. Wu***, K. Müllen*, "Novel Carbon and Carbon-Cobalt Nanostructures formation by Solid-state Thermolysis of Polyphenylene Dendrimers-Cobalt Complexes", *Adv. Mater.*, **2005**, *17*, 2957.
17. B. El Hamaoui, L. Zhi, **J. Wu***, J. Li, N. T. Lucas, Ž. Tomović, U. Kolb, K. Müllen*, "High-yielding Synthesis of Graphitic Carbon Nanotubes and Nanorods by Solid-state Pyrolysis of Carbon-rich Metal Complexes", *Adv. Funct. Mater.*, **2007**, *17*, 1179.
18. B. El Hamaoui, L. Zhi, **J. Wu***, Klaus Müllen*, "Self-assembly of Amphiphilic Hexa-peri-hexabenzocoronenes Into Uniform Nanowires", *Chem. Commun.*, **2007**, 2384.