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**Education**

- 6/2008 Ph. D. in Material Physics and Chemistry, South China University of Technology, China
- 6/2002 B. S. in Applied Physics, School of Physical Science and Technology, Zhengzhou University, China

**Professional Experiences**

- 7/2012 – present Assistant Research Scientist, University of Maryland – College Park
  - Synthesis and electrochemical characterization of nanostructured electrode materials by aerosol spray pyrolysis and electrospinning/spray
  - Investigated the influence of SEI films on battery performance of sulfur cathodes
  - Paper electrodes for Li-ion batteries
- 12/2010 – 6/2012 Ellen Williams Distinguished Postdoctoral Fellow, University of Maryland – College Park
  - Synthesis and characterization of porous carbon/sulfur composites for Li-ion and Na-ion batteries
  - Sn anodes for Li-ion and Na-ion batteries
- 9/2009 – 11/2010 Visiting scholar, University of Maryland
  - Li-S batteries
  - Si anodes for Li-ion batteries
- 7/2008 – 6/2009 Postdoctoral Research Fellow, University of California at Santa Barbara
  - Conducted the research on physical process of electronic devices
  - Investigated the fabrication architecture of multi-layer structures of polymer electronic devices
- 12/2006 – 5/2008 Visiting scholar, University of California at Santa Barbara
  - Performed the research on interface engineering of polymer films
  - Investigated the influence of electron injection layers on device performance and electric property
- 6/2003 – 12/2006 Research Assistant, South China University of Technology, Guangzhou, China
  - Pioneering in ink-jet printing technology for full color polymer light-emitting displays
  - Development of white polymer light-emitting diodes for solid-state lighting panels
  - Investigation of optoelectronic materials and devices

**Research Interests**

**Energy storage:** Li-S batteries, Na-ion batteries, all solid state batteries, and paper batteries

**Electronic devices:** solar cells, solid state lighting sources, flexible displays, and transparent devices

**Materials and synthesis:** nano-materials, paper electrodes, thin films, organic optoelectronic materials, electrospinning, and aerosol spray drying/pyrolysis

**Fundamental science:** electrochemistry, kinetics, interface reaction, semiconductor physics, optoelectronic property, and surface physics

## Awards and Scholarships

- Nov. 2010 **National Excellent Doctoral Dissertation Award (Top 100)**, China
- Mar. 2010 Ellen Williams Distinguished Postdoctoral Fellowship, UMD – College Park, USA
- Dec. 2009 Outstanding Ph.D. thesis Award of Guangdong Province, Guangzhou, China
- Nov. 2009 Outstanding Ph.D. thesis Award of South China University of Technology, Guangzhou, China
- Jan. 2009 Science and Technology Award of Guangdong Province, Guangzhou, China
- Oct. 2007 Outstanding Graduate student Award of Guangdong Province, Guangzhou, China
- Dec. 2005 Doctorate Foundation Award of South China University of Technology, Guangzhou, China
- Nov. 2005 First-class scholarship of the outstanding graduate students of SCUT, Guangzhou, China
- Feb. 2002 Outstanding student award of Zhengzhou University, Zhengzhou, China

## Publications (§ indicates equal contribution)

1. **Yunhua Xu**,<sup>§</sup> Guoqiang Jian,<sup>§</sup> Yihang Liu, Yujie Zhu, Michael R. Zachariah, Chunsheng Wang, Superior electrochemical performance and structure evolution of mesoporous Fe<sub>2</sub>O<sub>3</sub> anodes for lithium-ion batteries, *Nano Energy*, 3, 26, 2014.
2. **Yunhua Xu**,<sup>§</sup> Guoqiang Jian,<sup>§</sup> Michael R. Zachariah, Chunsheng Wang, Nano-structured Carbon-Coated Hollow CuO Spheres as High Rate Anodes for Lithium-Ion Batteries, *Journal of Materials Chemistry A*, 1, 15486, 2013.
3. **Yunhua Xu**, Yang Liu, Gaskell Karen, Yujie Zhu, Yihang Liu, Chao Luo, Bryan Eichhorn, Chunsheng Wang, Stabilized Sulfur as Cathodes for Room Temperature Sodium-Sulfur Batteries, submitted to *Nature Communications*.
4. **Yunhua Xu**, Yujie Zhu, Gaskell Karen, Yihang Liu, Chao Luo, Shiyu Zheng, Bryan Eichhorn, Kang Xu, Chunsheng Wang, Superior Cycle Stability of Solid Electrolyte Interface Film-Protected Sulfur Cathodes for Lithium-Sulphur Batteries, , submitted to *Journal of the American Chemical Society*.
5. Guoqiang Jian,<sup>§</sup> **Yunhua Xu**,<sup>§</sup> Li-Chung Lai, Chunsheng Wang, Michael R. Zachariah, Mn<sub>3</sub>O<sub>4</sub> Hollow Spheres for Lithium-ion Batteries with High Rate and Capacity, submitted to *Advanced Functional Materials*.
6. Chao Luo,<sup>§</sup> **Yunhua Xu**,<sup>§</sup> Yujie Zhu, Yihang Liu, Shiyu Zheng, Ying Liu, Alex Langrock, Chunsheng Wang, Selenium@Mesoporous carbon composite with superior lithium and sodium storage capacity, *ACS Nano*, 7, 8003, 2013.
7. Shiyu Zheng, Yvonne Chen, **Yunhua Xu**, Feng Yi, Yujie Zhu, Yihang Liu, Junhe Yang, Chunsheng Wang, In-Situ Formed Lithium Sulfide/Microporous Carbon Cathodes for Lithium-Ion Batteries, *ACS Nano*, accepted.
8. Chao Luo, Yujie Zhu, Tao Gao, **Yunhua Xu**, Yihang Liu, Jing Wang, Chunsheng Wang, Graphene Oxide Wrapped Croconic Acid Disodium Salt for Sodium Ion Battery Electrodes, *Journal of Power Sources*, accepted.
9. **Yunhua Xu**, Yujie Zhu, Chunsheng Wang, Mesoporous carbon/silicon composite anodes with enhancement performance for lithium-ion batteries, submitted to *Electrochemical Communications*.
10. Yujie Zhu, Jiangwei Wang, Yang Liu, Xiaohua Liu, Akihiro Kushima, Yihang Liu, **Yunhua Xu**, Scott X. Mao, Ju Li, Chunsheng Wang, Jianyu Huang, *In-situ* atomic-scale imaging of phase boundary migration in FePO<sub>4</sub> microparticles during electrochemical lithiation, *Advanced*

*Materials*, 25, 5461, 2013.

11. Yujie Zhu, Xiaogang Han, **Yunhua Xu**, Yihang Liu, Shiyong Zheng, Kang Xu, Liangbing Hu, Chunsheng Wang, Electrospun Sb/C Fibers for A Stable and Fast Sodium Ion Battery Anode, *ACS Nano*, 7, 6378, 2013.
12. Xiaogang Han, **Yunhua Xu**, Xinyi Chen, Yu-Chen Chen, Nicholas Weadock, Jiayu Wan, Hongli Zhu, Yonglin Liu, Heqin Li, Gary Rubloff, Chunsheng Wang, Liangbing Hu, Reactivation of Dissolved Polysulfides in Li-S Batteries Based on Atomic Layer Deposition of Al<sub>2</sub>O<sub>3</sub> in Porous Carbon Cloth, *Nano Energy*, DOI: 10.1016/j.nanoen.2013.07.011.
13. Yihang Liu, **Yunhua Xu**, Yujie Zhu, James N. Culver, Cynthia A. Lundgren, Kang Xu, Chunsheng Wang, Tin Coated Viral-Nanoforests as Sodium-Ion Battery Anodes, *ACS Nano* 7, 3627, 2013
14. **Yunhua Xu**,<sup>§</sup> Qing Liu,<sup>§</sup> Yujie Zhu, Yihang Liu, Alex Langrock, Michael R. Zachariah, Chunsheng Wang, Uniform Nano-Sn/C Composite Anodes for Lithium Ion Batteries, *Nano Letters* 13, 470, 2013.
15. Yihang Liu, Wei Zhang, Yujie Zhu, Yanting Luo, **Yunhua Xu**, Adam Brown, James N. Culver, Cynthia A. Lundgren, Kang Xu, Yuan Wang, Chunsheng Wang, Architecturing Hierarchical Function Layers on Self-Assembled Viral Templates as 3D Nano-Array Electrodes for Integrated Li-ion Microbatteries, *Nano Letters* 13, 293, 2013.
16. **Yunhua Xu**, Yujie Zhu, Yihang Liu, Chunsheng Wang, Electrochemical Performance of Porous Carbon/Tin Composite Anodes for Sodium-Ion and Lithium-Ion Batteries, *Advanced Energy Materials* 3, 128, 2013.
17. Yujie Zhu, **Yunhua Xu**, Yihang Liu, Chao Luo, Chunsheng Wang, Comparison of Electrochemical Performances of Olivine NaFePO<sub>4</sub> in Sodium-Ion Batteries and Olivine LiFePO<sub>4</sub> in Lithium-Ion Batteries, *Nanoscale* 5, 780, 2013.
18. Alex Langrock, **Yunhua Xu**, Yihang Liu, Sheryl Ehrman, Ayyakkannu Manivannan, Chunsheng Wang, Carbon coated hollow Na<sub>2</sub>FePO<sub>4</sub>F spheres for Na-ion battery cathodes, *Journal of Power Sources* 223, 62, 2013.
19. Yonglin Liu,<sup>§</sup> **Yunhua Xu**,<sup>§</sup> Xiaogang Han, Chris Pellegrinelli, Yujie zhu, Hongli zhu, Jiayu Wan, Alex Chong Chung, Oeyvind Vaaland, Chunsheng Wang, Liangbing Hu, Porous Amorphous FePO<sub>4</sub> Nanoparticles Connected by Single-Wall Carbon Nanotubes for Sodium Ion Battery Cathodes, *Nano Letters* 12, 5664, 2012.
20. **Yunhua Xu**, Juchen Guo, Chunsheng Wang, Sponge-like porous carbon/tin composite anode materials for lithium ion batteries, *Journal of Materials Chemistry* 22, 9562, 2012.
21. Lei Ying, **Yunhua Xu**, Na Li, Jing'ai Yan, Yuanyuan Li, Wei Yang, Junbiao Peng, Spectrally stable deep blue-emitting polyfluorenes containing dibenzothiophene-S,S-dioxide moiety, *Journal of Photonics for Energy* 2, 021212, 2012.
22. Juchen Guo, **Yunhua Xu**, Chunsheng Wang, Sulfur Impregnated Disordered Carbon Nanotubes Cathode for Lithium-Sulfur Batteries, *Nano Letters* 11, 4288, 2011.
23. Zhao Chen, Xuan-Dung Dang, Andrea Gutacker, Andrew Garcia, Huaping Li, **Yunhua Xu**, Lei Ying, Thuc-Quyen Nguyen, Guillermo C. Bazan, Reconstruction of Conjugated Oligoelectrolyte Electron Injection Layers, *Journal of the American Chemical Society* 132, 12160, 2010.
24. Lei Ying, Lei Wang, An-Qi Zhang, **Yunhua Xu**, Wei Yang, Yong Cao, Synthesis and Electroluminescent Properties of Hyperbranched Light-emitting Polymers with Iridium Complex as Core and 3,6-Carbazole as Branch, *Chemical Journal of Chinese Universities* 31, 1480, 2010.
25. Bo Liang, **Yunhua Xu**, Zhao Chen, Junbiao peng, Yong Cao, White polymer phosphorescent

- light-emitting devices with a new yellow-emitting iridium complex doped into polyfluorene, *Synthetic Metals* 159, 1876, 2009.
26. Huaping Li, **Yuhua Xu**, Jung Hwa Seo, Corey V. Hoven, Chunzeng Li, Guillermo C. Bazan, Zwitterionic Electron Injection Layers: Molecular Design, Device Function and Surface Properties, *Journal of the American Chemical Society* 131, 8903, 2009.
  27. Yan Xiong, Lei Wang, Wei Xu, Jianhua Zou, Hongbin Wu, **Yunhua Xu**, Junbiao Peng, Jian Wang, Yong Cao, Gang Yu, Performance analysis of PLED based flat panel display with RGBW sub-pixel layout, *Organic Electronics* 10, 857, 2009.
  28. **Yunhua Xu**, Reqiang Yang, Junbiao Peng, Alexander A. Mikhailovsky, Yong Cao, Thuc-Quyen Nguyen, and Guillermo C. Bazan, Solvent Effects on the Architecture and Performance of White-Emitting Polymer Light-Emitting Diodes with Conjugated Oligoelectrolyte Electron Transport Layers, *Advanced Materials* 21, 584, 2009.
  29. Rong Guan, **Yunhua Xu**, Lei Ying, Wei Yang, Hongbin Wu, Qiliang Chen and Yong Cao, Novel green-light-emitting hyperbranched polymers with iridium complex as core and 3,6-carbazole-co-2,6-pyridine unit as branch, *Journal of Materials Chemistry* 19, 531, 2009.
  30. Lei Ying, **Yunhua Xu**, Wei Yang, Lei Wang, Hongbin Wu, Yong Cao, Efficient red-light-emitting diodes based on novel amino-alkyl containing electrophosphorescent polyfluorenes with Al or Au as cathode, *Organic Electronics* 10, 42, 2009.
  31. **Yunhua Xu**, Rong Guan, Jiaying Jiang, Wei Yang, Hongyu Zhen, Junbiao Peng, and Yong Cao, Molecular Design of Efficient White-Light-Emitting Fluorene-Based Copolymers by Mixing Singlet and Triplet Emission, *Journal of Polymer Science Part A* 46, 453, 2008.
  32. Renqiang Yang, **Yunhua Xu**, Dung Dang, Thuc-Quyen Nguyen, Yong Cao, and Guillermo C. Bazan, Conjugated Oligoelectrolyte Electron Transport/Injection Layers for Organic Optoelectronic Devices, *Journal of the American Chemical Society* 130, 3282, 2008.
  33. Jeffrey Peet, Erin Brocker, **Yunhua Xu**, and Guillermo C. Bazan, Controlled  $\beta$ -phase Formation in Poly(9,9-di-n-octylfluorene) by Processing with Alkyl Additives, *Advanced Materials* 20, 1882, 2008.
  34. Rui Zhu, Jian Ming Lin, Wei Zhi Wang, Chao Zheng, Wei Wei, Wei Huang, **Yunhua Xu**, Jun Biao Peng, and Yong Cao, Use of the  $\beta$ -Phase of Poly(9,9-dioctylfluorene) as a Probe into the Interfacial Interplay for the Mixed Bilayer Films Formed by Sequential Spin-Coating, *The Journal of Physical Chemistry B* 112, 1611, 2008.
  35. **Yunhua Xu**, Bo Liang, Junbiao Peng, Qiaoli Niu, Wenbo Huang and Jian Wang, Efficient Red phosphorescence polymer light-emitting diodes with aluminum cathode, *Organic Electronics* 8, 535, 2007.
  36. Yong Huang, **Yunhua Xu**, Wei Xu, Jiangang Zhou, Junbiao Peng, Yong Cao, Efficient Top-Emitting Polymer Light-Emitting Diodes Using Chromium as Anode, *Chinese Physics Letters* 24, 2097, 2007.
  37. Qiaoli Niu, **Yunhua Xu**, Jiaying Jiang, Junbiao Peng, and Yong Cao, Efficient polymer white-light-emitting diodes with a single-emission layer of fluorescent polymer blend, *Journal of luminescence* 126, 531, 2007.
  38. Yong Zhang, **Yunhua Xu**, Qiaoli Niu, Wei Yang, Junbiao Peng, Xuhui Zhu, and Yong Cao, Synthesis and Optoelectronic Characterization of Conjugated Phosphorescent Polyelectrolytes with Neutral Ir Complex Incorporated into Polymer backbone and Their Neutral Precursors, *Journal of Materials Chemistry* 17, 992, 2007.
  39. Xiuju Zhang, **Yunhua Xu**, Yi-heng Sun, Huahong Shi, Xu-hui Zhu, Yong Cao, Synthesis of a red electrophosphorescent heteroleptic iridium complex and its application in efficient polymer light-emitting diodes, *Thin Solid Films* 515, 7347, 2007.

40. Bo Liang, Lei Wang, **Yunhua Xu**, and Yong Cao, High-Efficiency Red Phosphorescent Iridium Dendrimers with Charge-Transporting Dendrons: Synthesis and Electroluminescent Properties, *Advanced Functional Materials* 17, 3580, 2007.
41. Xiuju Zhang, **Yunhua Xu**, Huahong Shi, Synthesis and Phosphorescence of a New Greenish-blue Light-emitting Iridium(III) Bis(1-phenylpyridine)(1,2,4-triazole pyridine), *Chinese Journal of Luminescence* 28, 44, 2007.
42. Wei Xu, Junbiao Peng, **Yunhua Xu**, Jian Wang, Zhe Huang, Qiaoli Niu, Yong Cao, stability study of saturated red polymer light-emitting diodes, *Chinese Science Bulletin* 52, 144, 2007.
43. **Yunhua Xu**, Xiuju Zhang, Junbiao Peng, Qiaoli Niu, and Yong Cao, Efficient polymer white-light-emitting diodes with a phosphorescent dopant, *Semiconductor Science and Technology* 21, 1373, 2006.
44. **Yunhua Xu**, Junbiao Peng, and Yong Cao, Progress of white organic light-emitting diodes, *Progress in Chemistry* 18, 389, 2006.
45. Jiaxing Jiang, **Yunhua Xu**, Wei Yang, Zhenqin Liu, Hongyu Zhen, and Yong Cao, High-Efficiency White Light Single Polymer by Mixing Singlet and Triplet Light-Emitting, *Advanced Materials* 18, 1769, 2006.
46. Xiuju Zhang, **Yunhua Xu**, Huahong Shi, Organic Phosphorescent Electroluminescent Materials with Iridium Core, *Progress in Chemistry* 18, 870, 2006.
47. Hongyu Zhen, Wei Xu, Wei Yang, Qiliang Chen, **Yunhua Xu**, Jiaxing Jiang, Junbiao Peng and Yong Cao, White Light-Emitting Diodes from a Single Polymer with Singlet and Triplet Chromophores on the Backbone, *Macromolecular Rapid Communications* 27, 2095, 2006.
48. **Yunhua Xu**, Junbiao Peng, Jiaxing Jiang, Wei Xu, Wei Yang, and Yong Cao, Efficient white-light-emitting diodes based on polymer co-doped with two phosphorescent dyes, *Applied Physics Letters* 87, 193502, 2005.
49. **Yunhua Xu**, Junbiao Peng, Yueqi Mo, Qiong Hou, and Yong Cao, Efficient polymer white-light-emitting diodes, *Applied Physics Letters* 86, 163502, 2005.
50. Xiuju Zhang, Changyun Jiang, Yueqi Mo, **Yunhua Xu**, Huahong Shi, and Yong Cao, High-efficiency Blue Light-Emitting Electrophosphorescent Device with polymer host, *Applied Physics Letters* 86, 051116, 2005.
51. Wei Zhang, Meichun Huang, Yinchun Liu, **Yunhua Xu**, Yongzhi Zeng, Study of Electron Injection of Polymer Light-emitting Devices with a Bilayer Cathode of BaO/Al, *Journal of Xiamen University (Natural Science)* 44(s1), 326, 2005.
52. Ping Liu, Yamin Zhang, Guiju Feng, Jianhua Hu, Xiaoping Zhou, Qizhong Zhao, **Yunhua Xu**, Zhen Tong, and Wenji Deng, Synthesis and liquid crystal properties of a novel family of oligothiophene derivatives, *Tetrahedron* 60, 5259, 2004.
53. Ping Liu Qizhong Zhao, Xiaoping Zhou, **Yunhua Xu**, Jianhua Hu, Zhen Tong, Wenji Deng, Synthesis of Terthiophene Derivatives and Their Liquid Crystal Properties, *Chinese Journal of Applied Chemistry* 21, 797, 2004.
54. Wenji Deng, **Yunhua Xu**, Ping Liu, The uncertainty relations and minimum uncertainty states, *Acta Physica Sinica* 52, 2961, 2003.
55. Ping Liu, Xiaoping Zhou, Jianhua Hu, Qizhong Zhao, Wenji Deng, Zhen Tong, **Yunhua Xu**, Meixiang Wan, Synthesis and Liquid Crystal Properties of a Novel Class of Oligothiophene Derivatives, *Acta Chimica Sinica* 61, 774, 2003.
56. Ping Liu, Jianhua Hu, Qizhong Zhao, Xiaoping Zhou, Zhen Tong, **Yunhua Xu**, Wenji Deng, Synthesis and Liquid Crystal Properties of Oligothiophene Derivatives, *Journal of South China University of Technology (Natural Science Edition)* 31, 11, 2003.

## Patents

1. Wei Yang, Jiaying Jiang, Hongyu Zhen, **Yunhua Xu**, Junbiao Peng, and Yong Cao, Iridium Complex-Incorporated White Light-emitting Conjugated Polymers and the Applications, China Patent, Patent No.: CN200510035253.3.
2. Wei Yang, Yong Zhang, Lei Wang, **Yunhua Xu**, Junbiao Peng, and Yong Cao, Electrophosphorescent Conjugated Polymers and the Applications, China Patent, Patent No.: 200610036221.X.
3. Ping Liu, Qizhong Zhao, Wenji Deng, Xiaoping Zhou, Jiahua Hu, **Yunhua Xu**, Electro-Color Change Film of Oligothiophene Derivatives, China Patent, Patent No.: CN03247688.4.
4. Guillermo C. Bazan, **Yunhua Xu**, Renqiang Yang, Thuc-Quyen Nguyen, Conjugated Oligoelectrolyte Electron Transporting Layers, US Patent, US20090230362.
5. Huaping Li, **Yunhua Xu**, Guillermo C. Bazan, Zwitterionic Electronic Electron Injection Layers, US Patent, US20100145062.

## Conference Presentations

1. **Yunhua Xu**, Chunsheng Wang, Sponge-like porous carbon/tin composite anode materials for lithium ion batteries, 221<sup>st</sup> ECS meeting, Seattle, Washington, May 6-10, 2012.
2. **Yunhua Xu**, Chunsheng Wang, Tin/Carbon Composite Anodes for Long Cycle Life Lithium-Ion Batteries, 42<sup>nd</sup> Mid-Atlantic Regional Meeting of the ACS (MARM), College Park, Maryland, May 21-24, 2011.
3. **Yun-Hua Xu**, Jun-Biao Peng, Jia-Xing Jiang, Wei Xu, Wei Yang, and Yong Cao, Efficient Phosphorescent Polymer White-Light-Emitting Diodes, Sixth International Conference on Electroluminescence of Molecular Materials and Related Phenomena (ICEL-6), Hong Kong, August 7-10, 2006.
4. Yong Zhang, **Yun-Hua Xu**, Wen-Jin Zeng, Wei Yang and Yong Cao, Synthesis, Photophysical and Electrophosphorescence of High-Efficiency Conjugated Phosphorescent Polyelectrolytes and Their Neutral Precursors, Sixth International Conference on Electroluminescence of Molecular Materials and Related Phenomena (ICEL-6), Hong Kong, August 7-10, 2006.
5. Wei Yang, Jiaying Jiang, **Yunhua Xu**, Hongyu Zhen, and Yong Cao, High-efficiency white-light-emitting devices from a single polymer by mixing singlet and triplet emission, The International Conference on Science and Technology of Synthetic Metals (ICSM), Dublin, July 2-7, 2006.
6. **Yunhua Xu**, Junbiao Peng, Jiaying Jiang, Qiaoli Niu, Yong Cao, Efficient Phosphorescent White Polymer Light-Emitting Diodes, Forth China Conference of Organic and Polymer Emission and Excitation, Guangzhou, Nov. 2005.
7. Xiuju Zhang, **Yunhua Xu**, Huahong Shi, Yong Cao, Synthesis and Phosphorescence of a New Greenish-blue Light-emitting Iridium(III) Bis(1-phenylpyridine)(1,2,4-triazole pyridine), Forth China Conference of Organic and Polymer Emission and Excitation, Guangzhou, Nov. 2005.
8. Qiaoli Niu, **Yunhua Xu**, Junbiao Peng, Jiaying Jiang, Qiong Hou, Yong Cao, Efficient Single-Layer White Polymer Light-Emitting Diodes, Forth China Conference of Organic and Polymer Emission and Excitation, Guangzhou, Nov. 2005.
9. Bo Liang, Zhao Chen, **Yunhua Xu**, Yong Cao, Synthesis and Electroluminescence Properties of a New Iridium Compound, Forth China Conference of Organic and Polymer Emission and Excitation, Guangzhou, Nov. 2005.
10. **Yunhua Xu**, Junbiao Peng, Yueqi Mo, Qiong Hou, Yong Cao, Efficient White Polymer Light-Emitting Diodes, 10<sup>th</sup> China Luminance Conference, Dalian, Jul. 2004.