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主讲课程 高分子物理

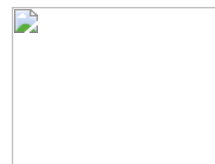
主要研究方向包括：

- 科研方向：
- ① 高分子合金及其复合材料应用研究，特别在医疗器械上的应用；
 - ② 利用嵌段共聚物的自组装结构构筑无机纳米粒子、有机/无机杂化材料；
 - ③ 含氟高分子加工、含氟高分子与通用高分子的复合、通用共聚物的氟化改性。

- 科研成果及奖励（包括项目、专利、鉴定等）（2005年以来）：
1. 利用嵌段共聚物为模板构筑不同形状的金属或半导体纳米结构及其图案（国家自然科学基金，合同号20674030），2007.1-2009.12，项目负责人。
 2. 由Janus胶束构筑具有不对称结构的金属-金属氧化物纳米粒子（国家自然科学基金，合同号51173069），2012.1-2015.12，项目负责人。
 3. 利用嵌段共聚物为模板构筑不同形状的半导体纳米结构（省自然科学基金，合同号Y2006B02），2007.1-2009.12，项目负责人。
 4. 利用嵌段共聚物自组装制备高催化活性不对称金属-金属氧化物纳米粒子（省自然科学基金，合同号ZR2010BM009），2011.1-2013.12，项目负责人。
 5. 利用嵌段共聚物为模板构筑不同形状的纳米结构（济南大学博士基金），20067-2009，项目负责人。
 6. 医用级抗辐射灭菌PC材料的研发（企业），2010.11-2013.11，项目负责人。
 7. 特种高分子片材成型工艺研究（企业），2011.4-2011.12，项目负责人。

教学成果与奖励（2005年以来）：

- 代表性论文（2005年以来）：
1. "High-Density Arrays of Titania Nanoparticles using Monolayer Micellar Films of Diblock Copolymers as Templates", Xue Li, King Hang Aaron Lau, Dong Ha Kim, Wolfgang Knoll, Langmuir 2005, 21, 5212.
 2. "Fabrication of Au/Titania Composite Nanodot Arrays from Au-loaded Block Copolymer Micellar Films", Xue Li, Dong Ha Kim, Wolfgang Knoll, Macromol. Rapid. Commun. 2005, 26, 1173.
 3. "One step route to the fabrication of highly porous polyaniline nanofiber films by Using PS-b-PVP diblock copolymers as Templates", Xue Li, Shengjun Tian, Yang Ping, Dongha Kim, Wolfgang Knoll, Langmuir 2005, 21, 9393.
 4. "Polymer Surfaces with Reversibly Switchable Ordered Morphology" Liang Cui, Yu Xuan, Xue Li, Yan Ding, Binyao Li, and Yanchun Han, Langmuir 2005, 21, 11696.
 5. "Hybrid Organic-Inorganic Nanostructures Fabricated from Layer-by-Layer Self-Assembled Multilayers of Hyperbranched Polyglycerols and Phosphorous Dendrimers" Dong Ha Kim, Ok-Joo Lee, Emilie Barriau, Xue Li, Anne-Marie Caminade, Jean-Pierre Majoral, Holger Frey, Wolfgang Knoll, J. Nanosci. Nanotechnol. 2006, 6(12), 1.
 6. "Au/Titania Composite Nanoparticle Arrays with Controlled Size and Spacing by Organic-Inorganic Nanohybridization in Thin Film Block Copolymer Templates", Xue Li, Jun Fu, Martin Steinhart, Dong Ha Kim, Wolfgang Knoll, Bull. Korean Chem. Soc. 2007, 28, 1015.
 7. "Morphology Change of Asymmetric Diblock Copolymer Micellar Films during Solvent Annealing", Xue Li, Juan Peng, Yan Wen, Dong Ha Kim, Wolfgang Knoll, Polymer 2007, 48, 2434.
 8. "Fabrication of Metallized Nanoporous Films from the Self-Assembly of a Block Copolymer and Homopolymer Mixture", Xue Li, Shuying Zhao, Shuxiang Zhang, Dong Ha Kim, Wolfgang Knoll, Langmuir 2007, 23, 6883.
 9. "Fabrication and Photocatalytic Activities of Morphology-Controlled Titania Nanoobject Arrays by Block Copolymer Templates" Juan Peng, Xue Li, Dong Ha Kim, Wolfgang Knoll, Macromol. Rapid Commun. 2007, 28, 2055.
 10. "One Step Route to the Fabrication of Arrays of TiO2 nanobowls via a Complementary Block Copolymer Templating and Sol-Gel Process" Xue Li, Juan Peng, Joo-Hee Kang, Martin Steinhart, Wolfgang Knoll and Dong Ha Kim, Soft Matter 2008, 4, 515.
 11. "Effects of Additives on the Morphologies of thin Titania Films from Self-Assembly of a Block Copolymer" Xue Li, Hui Yang, Chunsheng Li, Zhiguo Zhang, Dongha Kim. Polymer 2008, 49, 1376.
 12. "One Simple Route to Fabricate Gold Nanowire Network Films by Using P2VP-b-PEO Diblock Copolymers as Templates" Hui Yang, Limei Xu, Xue



- Li, Xiaokai Zhang. *Materials Chemistry and Physics* 2009, 114, 525.
13. "Janus Micelles Formation Induced by Protonation/Deprotonation of Poly(2-vinylpyridine)-block-poly(ethylene oxide) Diblock Copolymers". Xue Li, Hui Yang, Limei Xu, Xiaoning Fu, Huanwang Guo and Xiaokai Zhang. *Macromolecular Chemistry & Physics* 2010, 211, 297.
14. "A Facile Preparative Method for Au-Core, Block Copolymer-Shell Nanoparticles by UV irradiation of polystyrene-block-poly(2-vinylpyridine)/HAuCl₄ solutions". Hui Yang, Limei Xu, Xue Li, Xiaokai Zhang. *Journal of Nanoscience and Nanotechnology* 2010, 10, 6340.
15. "Morphological Change of Aggregates of Polystyrene-block-Poly(2-vinyl pyridine)/HAuCl₄ Complexes in Solution". Limei Xu, Hui Yang, Xue Li, Xiaokai Zhang, Shuying Zhao, Chunsheng Li, Shuxiang Zhang. *Journal of Macromolecular Science, Part B Physics* 2010, 49, 770.
16. "Vesicle formation of polystyrene-block-poly (ethylene oxide) block copolymers induced by supercritical CO₂ treatment" Limei Xu, Xiaokai Zhang, Hui Yang, Xue Li,* Chunsheng Li, Shuxiang Zhang. *Polymer* 2010, 51, 3808.
17. "A facile preparative method for gold-containing vesicles from poly(styrene-block-2-vinylpyridine) block copolymer/HAuCl₄ complexes" Hui Yang, Limei Xu, Xiaokai Zhang, Xue Li. *Polym. Bull.* 2010, 65, 599.
18. "A multiphasic model for the volume change of polyelectrolyte hydrogels" Ligang Feng, Yuxi Jia, Xiliang Chen, Xue Li, and Lijia An. *J. Chem. Phys.* 2010, 133, 114904.
19. "Preparation and Photocatalytic Activity of Eccentric Au-Titania Core-Shell Nanoparticles by Block Copolymer Templates" Xue Li,* Xiaoning Fu and Hui Yang *Phys. Chem. Chem. Phys.*, 2011, 13, 2809.
20. "One-step method for preparation of pH-responsive gold nanoparticles with block copolymer shell structures by UV irradiation" Xiaoning Fu, Hui Yang, Xiaokai Zhang, Xue Li, Limei Xu, Yuxi Jia *Polym. Bull.* 2011, 67, 1059.
21. "Arrays of Au-TiO₂ Janus-like Nanoparticles Fabricated by Block Copolymer Templates and Their Photocatalytic Activity in the Degradation of Methylene Blue" Xiaoning Fu, Jun Liu, Hui Yang, Jiuchuan Sun, Xue Li,* Xiaokai Zhang, Yuxi Jia *Materials Chemistry and Physics* 2011, 130, 334.
22. "Comparison of the multiphasic model and the transport model for the swelling and deformation of polyelectrolyte hydrogels" Ligang Feng, Yuxi Jia, Xue Li, Lijia An *Journal of the Mechanical Behavior of Biomedical Materials* 2011, 4, 1328-1335.
23. Li, X.; Peng, J.; Knoll, W.; Kim, D. H. Hybrid TiO₂ Nanostructured Materials Based on Self-Assembly Processes and Their Application. In *Metal Oxide Nanostructures and Their Applications*; Umar, A.; Hahn, Y.-B., Ed.; American Scientific Publishers: California, 2010; Vol. 4, pp 1-20. (专著)

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