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**主要研究方向:**

压力驱动膜（如反渗透膜、纳滤膜）制备

膜分离技术（如反渗透、纳滤、电渗析等）的应用

**个人简介:**

2005年7月在国家海洋局第二海洋研究所获海洋化学理学硕士学位，2005年8月进入浙江工业大学化材学院工作，2012年3月在浙江大学获化学工程工学博士学位，2013年3月至2014年5月在加州大学洛杉矶分校（UCLA）访学一年。2014年9月调入浙江工业大学海洋学院膜分离与水科学技术中心工作，现任主任助理。主要从事复合反渗透膜制备及膜分离技术（反渗透、纳滤、电渗析等）应用的研究工作，先后主持完成了国家自然科学基金1项、国家“973”项目子课题分项1项、省自然科学基金各2项及其他省级项目总计7项，作为主要研究人员参与了2项国家自然科学基金项目、2项国家“863计划”课题、2项“973计划”课题和1项浙江省科技重大科技专项共计10余项项目的研究。近年来，发表的有关复合反渗透膜制备及膜分离应用方面的论文及会议报告有30余篇，其中SCI收录论文20多篇，被他引100余次，申请国家发明专利6项。

**主要学术成果:**

**近年主持或参与科研项目:**

1. LbL自组装法二次调控反渗透复合膜的微结构与性能研（LY13B060006），浙江省自然科学基金一般项目，2013.01-2015.12，主持。
2. 耐污染抗氧化复合反渗透膜的设计、制备及成膜机理研究（21006096），国家青年基金项目，2011.01-2013.12，主持。
3. 不对称催化反应研究及其在托特罗定合成中的应用（2009R50002-14），浙江省科技厅一般项目，2012.01-2014.12，主持。
4. 节能型高分子复合膜的微结构调控与制备方法（课题编号：2009CB 623402），国家“973计划”课题委托（三级子课题），2009.08-2011.02，主持。

5. 常压水解-电渗析-生化法集成技术处理高含盐、高浓度有机磷农药废水的研究 (Y506026), 浙江省自然科学基金一般项目, 2008.01-2009.12, **主持**。
6. 膜法高效分离浓缩 L-色氨酸的研究及应用(20060003), 浙江工业大学 2006 年度科技发展基金资助项目, 2006.1-2007.12, **主持**。
7. 农用抗生素清洁生产膜分离技术的应用 (2006 年度), 浙江省重中之重应用化学学科开放基金项目, 2006.7-2008.6, **主持**。
8. 膜技术分子筛催化剂无废水排放清洁生产新工艺开发及工业示范 (2015AA03A601), 国家“863 计划”子课题, 2015.01-2017.12, **参与**。
9. 枝状供吸杂嵌型多极上转换荧光分子的设计、合成、结构与双光子吸收性能 (20110624), 国家青年基金, 2012.01-2014.12, **参与**。
10.  $\alpha$ -羟(硫)基乙醛参与的有机不对称催化串联反应研究 (20110624), 浙江省自然科学基金一般项目, 2011.01-2013.12, **参与**。
11. 不受取代基定位规律制约的区域专一性的 C-H 键定向硝化反应研究 (20110628), 国家基金面上项目, 2012.01-2015.12, **参与**。
12. 毒死蜱清洁生产与废水低排放技术开发 (20100035), 国家科技部重大项目, 2011.01-2013.12, **参与**。
13. 抗病毒新药安普那韦合成工艺研究 (20100185), 浙江省科技厅重点项目, 2011.01-2013.12, **参与**。
14. 噻唑锌杀菌剂的创新开发 (2011BAE06B02-22), 国家科技支撑计划子课题, 2011.01-2015.03, **参与**。
15. 基于 Baylis-Hillman 加成物及其衍生物为分子构筑平台的金催化反应研(Y407168), 浙江省自然科学基金一般项目, 2008.01-2009.12, **参与**。
16. 含卤芳胺农药关键中间体之清洁生产技术研发及其应用(2005C11024), 浙江省科技厅重大专项, 2005.7-2007.6, **参与**。

近年发表学术论文 (第一作者或通讯作者\*):

1. Chunyang Yu, Li Ma, Ke Li, Shanlong Li, Yannan Liu, **Lifen Liu\***, Yongfeng Zhou\*, and Deyue Yan, Computer Simulation Studies on the pH-Responsive Self-Assembly of Amphiphilic Carboxy-Terminated Polyester Dendrimers in Aqueous Solution, *Langmuir*, **2017**, 33, 388–399
2. Yan Chao Xu, Yu Pan Tang, **Li Fen Liu\***, Zhan Hu Guo\*, Lu Shao\*, Nanocomposite organic solvent nanofiltration membranes by a highly efficient mussel-inspired co-deposition strategy, *Journal of membrane science*, **2017**, 526: 32-42.

3. Xiaolin Chen, HaoWu, **Lifen Liu\***, Congjie Gao, Synthesis and Characterization of Trimesoylamidoamine, *Chemical Journal of Chinese Universityies-Chinese*, **2016**, 37(5): 983-988.
4. Ming-Bang Wu, Yan Lv, Hao-Cheng Yang, **Li-Fen Liu\***, Xi Zhang, Zhi-Kang Xu\*, Thin film composite membranes combining carbon nanotube intermediate layer and microfiltration support for high nanofiltration performances, *Journal of membrane science*, **2016**, 515: 238-244.
5. Li-Xiang WU, Zhi-Bing CAI, Xiao-Lin CHEN, **Li-Fen LIU\***, Li-Fang Zhu, Cong-Jie Gao. Study on stability of a novel poly (amide-urea-imide) composite reverse osmosis membrane. *Chemical Journal of Chinese Universityies-Chinese*, **2015**, 36(4): 765-771.
6. **Li-Fen Liu\***, Zhi-Bin Cai, Jiang-Nan Shen, Li-Xiang Wu, Eric M.V. Hoek, Cong-Jie Gao, Fabrication and characterization of a novel poly(amide -urethane@imide) TFC reverse osmosis membrane with chlorine- tolerant property, *Journal of Membrane Science*, **2014**, 469: 397-409.
7. **Li-Fen LIU\***, De-Zhi XU, Huan-Lin CHEN and Cong-Jie GAO\*. Synthesis of 5-Isocyanato-isophthaloyl chloride. *Chemical Industry and Engineering Progress*, **2013**, 32 (01): 184-187. (In Chinese with English abstract)
8. **Li-Fen LIU\***, De-Zhi XU, Lin Zhang and GAO Cong-Jie\*. Preparation and Characterization of a novel polyimide-urethane composite reverse osmosis membrane material. *Chemical Journal of Chinese Universities-Chinese*, **2012**, 33(7): 1605-1612.
9. **Li-Fen LIU\***, De-Zhi XU, Huan-Lin CHEN and Cong-Jie GAO\*. A novel polyamide-urea-imide composite reverse osmosis membrane prepared via two-step interfacial polymerization. *Journal of Chemistry and Engineering (China)*, **2012**, 63(6): 1913-1921.
10. De-Zhi XU, **Li-Fen LIU\***, Dan-Qian XU and Cong-Jie GAO. Synthesis of 2,2-difluoropropan-1,3-diamine. *Fine Chemicals*, **2012**, 29(06):621-624. (In Chinese with English abstract)
11. **Li-Fen LIU\***, Pei-Qing MAO, De-Zhi XU, Lin Zhang and GAO Cong-Jie\*. Chemical structure and performance of a novel polyimide-urethane composite reverse osmosis membrane material. *Chemical Journal of Chinese Universities-Chinese*, **2012**, 33(4): 833-837.
12. **Li-Fen Liu\***, Pei-qing Mao, De-zhi Xu and Hui-min Ruan. Pretreatment of high-salinity and high-concentration organophosphorus pesticide wastewater by hydrolysis method at normal temperature and pressure. *Journal of Zhejiang University of Technology*, **2011**, 2: 127-130. (In Chinese with English abstract)

13. Pei-Qing MAO, **Li-Fen LIU\***, De-Zhi XU and Cong-Jie GAO. Synthesis of N,N'-dimethyl-1,3-benzenediamine by reduction method with NaBH<sub>4</sub> and I<sub>2</sub>. *Chemical Journal of Chinese Universities-Chinese*, **2011**, 32: 2558-2561.
14. **Li-Fen Liu**, Lan-Lan Yang, Ke-Yong Jin, Li-Guang Wu, Dan-Qian Xu\* and Cong-Jie Gao. Recovery of L-tryptophan from isoelectric crystallization wastewater by combined membrane processes, *Separation and Purification Technology*, 2009, 66: 243-249.
15. Lanlan YANG, **Lifen LIU\***, Yiming LI, Peiqing Mao and Danqian XU\*. Preparation of water-soluble ionic liquids by electrodialysis. *Journal of Chemistry and Engineering (China)*, **2009**, 60: 1838-1842.
16. **Li-Fen Liu**, San-Chuan Yu, Li-Guang Wu, Cong-Jie Gao\*. Study on a novel polyamide-urea reverse osmosis composite membrane (ICIC-MPD) III. Analysis of membrane electrical properties. *Journal of Membrane Science*, **2008**, 310: 119-128.
17. **Li-Fen Liu**, San-Chuan Yu, Li-Guang Wu, Cong-Jie Gao\*. Study on a novel polyamide-urea reverse osmosis composite membrane (ICIC-MPD) II. Analysis of membrane antifouling performance. *Journal of Membrane Science*, **2006**, 283: 133-146.
18. **Li-Fen Liu**, San-Chuan Yu, Yong Zhou, Cong-Jie Gao\*. Study on a novel polyamide-urea reverse osmosis composite membrane (ICIC-MPD) I. Preparation and characterization of ICIC-MPD membrane. *Journal of Membrane Science*, **2006**, 281: 88-94.
19. **Lifen Liu**, Sanchuan Yu and Congjie Gao\*. Research advances in antifouling of reverse osmosis composite membrane. *Membrane Science and Technology*, **2005**, 25: 69-72. (In Chinese with English abstract)
20. **Li-Fen Liu**, San-Chuan Yu, Yong Zhou, Ke-Yong Jin and Cong-Jie Gao\*. Preparation of 5-chloroformyloxyisophthaloyl chloride. *Fine Chemicals*, **2005**, 22: 227-300. (In Chinese with English abstract)

近年参加国际学术会议：

1. **Li-Fen Liu\***, Xiao-lin Chen and Cong-jie Gao, Modification and characterization of a novel poly(amide-urea) reverse osmosis membrane by two-step interfacial polymerization, *The 10th Conference of Aseanian Membrane Society (AMS9)*, Nara, Japan, July 26- 31, **2016**. (Oral presentation & co-chair)
2. **Li-Fen Liu\***, Xiao-lin Chen and Cong-jie Gao, New polyamide TFC reverse osmosis membranes fabricated from a novel trimesoylamidoamine monomer, *The 5<sup>TH</sup> IWA Regional Conference On Membrane Technology (IWA-RMTC2016)*, Kunming, China, Aug. 22-24, **2016**. (Oral presentation)
3. **Li-Fen Liu\***, Xiao-Lin Chen, Hao Wu and Cong-JieGao. Modification and characterization

of a novel poly(amide-urea) reverse osmosis membrane by two-step interfacial polymerization, *The Euromembrane 2015 Conference*, Aachen, Germany, September 6-10, **2015**. (Poster presentation)

4. **Li-Fen Liu\***, Xiao-Lin Chen, Hao Wu and Cong-JieGao. Modification and characterization of a novel poly(amide-urethane/imide) reverse osmosis membrane by addition of nanoparticles, *The 9th Conference of Aseanian Membrane Society (AMS9)*, Taipei, July 19-22, **2015**. (Oral presentation & co-chair)
5. **Li-Fen Liu\***, Li-Xiang Wu, Xiao-Lin Chen and Cong-JieGao. Fabrication and characterization of a novel poly(amide-urethane@imide@NaA) nanocomposite reverse osmosis membrane by two-step interfacial polymerization, *The 10th International Congress on Membranes and Membrane Processes (ICOM2014)*, Suzhou, CHINA, July 20-25, **2014**. (Oral presentation & co-chair)
6. **Li-Fen Liu\***, Li-Xiang Wu and Cong-JieGao. Fabrication and characterization of a novel chlorine-tolerant poly(amide/urethane/imide) TFC reverse osmosis membrane, *2013 the 5th Cross-strait senior Conference on Membrane Science&Technology*, Taiwan, Aug 8-13, **2013**. (Poster presentation)

#### 近年申请国家发明专利：

1. **刘立芬**, 陈晓林, 周勇, 高从堦, 一种反渗透复合膜及其制备方法, CN 201610128324.2, 2016-3-7.
2. 周勇, **刘立芬**, 高从堦, 一种高通量混合基质复合膜的制备方法, CN201410794529.5, 2014-12-18。
3. **刘立芬**, 徐德志, 许丹倩, 高从堦, 一种 2,2-二氟丙烷-1,3-二胺的制备方法, CN201110343921.4, 2011-11-3。
4. **刘立芬**, 茅佩卿, 徐振元, 高从堦, 一种 N,N'-二烷基间苯二胺的制备方法, CN201010298024.1, 2010-9-29.
5. 徐寅初, 吴礼光, 卫龙, **刘立芬**, 沈江南, 一种用集成膜分离浓缩草甘膦母液的方法, CN200510061711.0, 2006-5-24.
6. 俞三传, 周勇, **刘立芬**, 高从堦, 5-氧甲酰氯-异酞酰氯制备新工艺, CN200410017732.8, 2004-4-14.