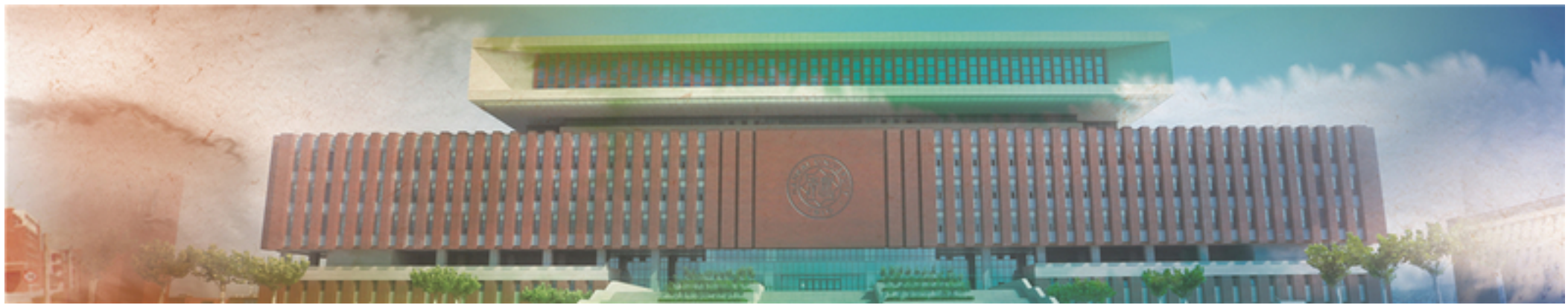

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研究领域：以新材料与膜科学技术为主线，贯彻低碳理念，交叉环境、材料、生物、化学、化工、机械等学科，围绕水环境污染防治、污水资源化利用、工业节能减排等主题展开。

膜曝气生物膜反应器（**MABR**）：过程与机理研究、生物膜培养驯化与表征、应用基础研究、装备系统研发、应用开发。应用领域：城市污水处理与资源化利用、工业废水处理（包括特种废水处理）、河湖水体净化（包括黑臭水体和劣V类水体治理）、水环境修复等。

膜蒸馏（**MD**）脱盐：传质理论模型、组件结构优化、强化过程控制、多级/多效工艺开发与优化、设备研发、应用研究。应用领域：海水资源化利用、高难工业废水处理与资源化、工业过程的浓缩、分离与结晶等。

高性能分离膜与膜材料：新型膜材料合成、制膜理论与基础研究、界面材料结构和性质研究、新型制膜工艺与方法、膜器研究与设计、应用测试。应用领域：气体分离、水处理等。

导热功能高分子材料：导热高分子材料合成、传热网络构建、传热机理研究、传热单元设备研制、新型换热设备研发、传热过程及模拟优化、工艺放大与工业测试。应用领域：常规热交换、腐蚀性介质换热、低位热能利用等具有热交换需求的领域。

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教育背景

1980.9-1984.7，山西师范学院化学专业，获理学学士学位；

1989.9-1992.7，南开大学化学专业，获理学硕士学位；

1995.9-1998.11，天津大学化学工程专业，获工学博士学位。

科研教学经历

1984.7-1989.9：山西晋中师专（晋中学院），助教；

1992.7-1998.12：南开大学分子生物学研究所，助理研究员；

1998.12-2000.4：宝洁（P&G, 中国）研发中心，研究员；

2000.4-2001.8：挪威Telemark大学生物化工系，博士后；

2001.11-2004.8：美国新泽西理工大学化工学院，博士后；

2004.8-2005.11：加拿大泽农环境公司，高级研究员；

2006.1-2020.7：天津大学化工学院，研究员，博士生导师；

2020.8-至今：南开大学环境科学与工程学院，教授，博士生导师。

学术与社会任职

天津市滨海新区政协常委

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科研项目

政府相关科研课题近30项，企业相关课题近20项，代表性课题：

1. “膜蒸馏海水脱盐过程中的膜污染机理研究”，国家自然科学基金面上项目（21878218），2019.01-2022.12；

2. “基于可持续消除水体黑臭的技术集成体系与示范研究”，2018年天津市生态环境科技重大专项项目（18ZXSZSF00030），2019.01-2020.12；

3. “EHBR黑臭河道治理应用示范研究”，青岛市科技计划项目，项目编号：16-3-1-28-fh，起止年月：2016.6-2018.7；

4. “时空变化条件下复杂危化品污染体系控制”，国家自然科学基金应急管理项目（21656001），2016.01-2017.12；

5. “促进传递MABR短程硝化反硝化机理及过程强化研究”，国家自然科学基金面上项目（51478304），2015.1-2018.12；

6. “高耐氯和抗生物污染反渗透膜的制备技术及应用示范研究”，国家海洋公益性行业科研专项（201405009），2014.1.1-2017.12.31；

7. “高性能海水淡化膜技术创新服务平台-耐氯抗污染反渗透膜制备单元”，天津市海洋科技创新项目（CXST 2014-34-3-2），2014.7-2017.12；

8. “MABR工业园区综合废水处理技术研究与示范”，天津市科技支撑计划重点项目（13ZCZDSF005000），2013.7-2015.6；

9. “节能减排膜蒸馏海水淡化研究与应用示范”，天津市科技支撑计划重点项目（12ZCZDSF02200），2012.4-2015.3；

10. “低成本有机废水资源与能源转化耦合二氧化碳减排的新型系统技术”，科技部国际合作项目（S2011ZR0434），2011.1-2013.12；

11. “膜蒸馏海水淡化成套技术及中试装置研究”，天津市科技支撑计划重点项目（08ZCKFSH02200），2008.4-2010.3；

12. “膜蒸馏海水淡化技术研究”，“十一五”国家科技支撑计划“海水淡化与海水资源综合利用”重大项目课题（2006BAB03A06），2007.1-2010.12。

13. “可燃冰开采乙二醇再生与回收（MRU）工艺系统开发与技术服务”, 中船重工船舶设计研究中心有限公司, 项目编号： 2019GKF-0448, 2019.07.10-2020.10.30；

14. “曝气膜在污水处理中的应用研究”，中国葛洲坝集团水务运营有限公司，合同编号：2018GFW-0307，2018.9-2019.9；

15. “Membrane Distillation (MD) Prototype Optimization/Testing and Others”，通用电子公司(GE)，合同编号：201100516/201000672，2011.4-2011.10。

学术论著

近五年代表性学术论文：

1）Shasha Song, Boyang Hu, Guang Qu, Ziming Wang, Guangrui Qi, Kunli Tang, and **Baoan Li***, Reinforced Interfacial Interaction to Fabricate Poly(vinylidene fluoride) Composites with High Thermal Conductivity for Heat Exchangers, ***Industrial & Engineering Chemistry Research***, 2020, 59(40), 17845–17855

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6）Xipeng Li, Huiting Shan, Wei Zhang, **Baoan Li***, 3D printed robust superhydrophilic and underwater superoleophobic composite membrane for high efficient oil/water separation, ***Separation and Purification Technology***, 2020, 237, 116324

7）Zhiye Sun, Mei Li, Guofeng Wang, Xiaojun Yan, Yi Li, Meichao Lan, Rukang Liu, **Baoan Li***, Enhanced carbon and nitrogen removal in an integrated anaerobic/anoxic/aerobic-membrane aerated biofilm reactor system, ***RSC Advances***, 2020, 10, 28838–28847

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19）Chunyu Du, Mei Li, Min Cao, Shasha Song, Shichao Feng, Xipeng Li, Hong Guo, **Baoan Li***, Mussel-Inspired and Magnetic Co-functionalization of Hexagonal Boron Nitride in Poly(vinylidene fluoride) Composites Toward Enhanced Thermal and Mechanical Performance for Heat Exchangers, ***ACS Applied Materials & Interface***, 2018, 10, 34674−34682

20）Ziyi Wang, Yuanyuan Tang*, **Baoan Li***, Bicontinuous and cellular structure design of PVDF membranes by using binary solvents for the membrane distillation process, ***RSC Advances***, 2018, 8(44), 25159–25167

21）Huiting Shan, Jun Liu, Xipeng Li, Yi Li, F. Handan Tezel, **Baoan Li***, Shichang Wang, Nanocoated amphiphobic membrane for flux enhancement and comprehensive anti-fouling performance in direct contact membrane distillation, ***Journal of Membrane Science***, 2018, 567, 166–180

22）Meichao Lan, Mei Li, Jun Liu, Xiao Quan, Yi Li, **Baoan Li***, Coal chemical reverse osmosis concentrate treatment by membrane-aerated biofilm reactor system, ***Bioresource Technology***, 2018, 270, 120–128

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24）Shasha Song, Min Cao, Huiting Shan, Chunyu Du, **Baoan Li***, Polyhedral oligomeric silsesquioxane functionalized carbon nanotubes for high thermal conductive poly(vinylidene fluoride) composite membrane, ***Materials and Design***, 2018, 156, 242–251

25）Hong Guo, Xin Li, Ziyi Wang, **Baoan Li***, Jixiao Wang, Shichang Wang, Thermal conductivity of PVDF/PANI-nanofiber composite membrane aligned in an electric field, ***Chinese Journal of Chemical Engineering***, 2018, 26(5), 1213–1218

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35）Hong Guo, Xin Li, **Baoan Li***, JixiaoWang, Shichang Wang, Thermal conductivity of graphene/poly(vinylidene fluoride) nanocomposite membrane, ***Materials and Design***, 2017, 114, 355–363

36）Hailong Tian, Jie Liu, Tengteng Feng, Haifeng Li, Xiaolei Wu*, **Baoan Li***, Assessing the performance and microbial structure of biofilms adhering on aerated membranes for domestic saline sewage treatment, ***RSC Advances***, 2017, 7, 27198–27205

37）Mei Li, Peng Li, Chunyu Du, Linquan Sun, **Baoan Li***，Pilot-Scale Study of an Integrated Membrane-Aerated Biofilm Reactor System on Urban River Remediation, ***Industrial & Engineering Chemistry Research***, 2016, 55 (30), 8373–8382

38）Yang Song, Ziyi Wang, Qin Wang, **Baoan Li***, Benhe Zhong, Preparation of PVDF/$CaCO_3$ hybrid hollow fiber membranes for direct contact membrane distillation through TIPS method, ***Journal of Applied Polymer Science***, 2016, 133(18), 4328–4339

39）Tian HL, Yan YC, Chen YW, Wu XL*, **Li BA***, Process performance and bacterial community structure under increasing influent disturbances in a membrane-aerated biofilm reactor, ***Journal of Microbiology and Biotechnology***, 2016, 26(2), 373–384

40）Peng Li; Mei Li; Yunge Zhang; Huimin Zhang; Linquan Sun, **Baoan Li***, The treatment of surface water with enhanced membrane-aerated biofilm reactor (MABR), ***Chemical Engineering Science***, 2016, 144, 267–274

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44）Ziyi Wang, Linquan Sun, Xin Li, **Baoan Li***, Shichang Wang, Preparation And Characterization Of Thermal Conductive Composite Membranes Of Aligned Esterified Carbon Nanotubes/Poly(vinylidene fluoride), ***Polymer-Plastics Technology and Engineering***, 2015, 54, 515–522

45）Linquan Sun, Li Wang, Ziyi Wan, **Baoan Li***, Shichang Wang, Characteristics analysis of cross flow vacuum membrane distillation process, ***Journal of Membrane Science***, 2015, 488, 30–39

46）Hai-Long Tian, Jie-Yu Zhao, Hong-Yu Zhang, Chang-Qiao Chi, **Bao-An Li***, Xiao-Lei Wu, Bacterial community shift along with the changes in operational conditions in a membrane-aerated biofilm reactor, ***Applied Microbiology and Biotechnology***, 2015, 99(7), 3279–3290

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著作：

1）李保安等，《黑臭河道治理与水生态修复》（第一版），中国水利水电出版社，2017.10，ISBN 978-7-5170-5996-7，中国版本图书馆CIP数据核字（2017）第262531号，参编

2）李保安，王宏涛，《海水淡化技术与工程》（8.3 膜蒸馏），“十二五”国家重点图书，化学工业出版社，2015.04，ISBN 978-7-122-22837-6，中国版本图书馆CIP数据核字（2015）第014403号，参编

专利：

1）田海龙、惠明、曲建航、李保安、黄亮、李海峰，污水处理过程中的臭气处理装置及臭气去除工艺，国家发明专利，2017.12.6，专利号：ZL 201711277880.7

2）李保安、李希鹏，一种超亲水及水下超疏油多孔复合膜制备方法，国家发明专利，2017.06.20，专利号：ZL 201710469038.7

3）李保安、杜春雨，一种基于电荷作用的磁性碳纳米管的制备方法，国家发明专利，2016.09.28，专利号：ZL 2016 1 0861400.0

4）李保安、韩磊，一种新型中空纤维蒸发器，实用新型专利，2016.08.10，专利号：201620861737.7

5）李保安、侯飞飞、邢明皓，一种MABR用复合膜，实用新型专利，2013.02.06，专利号：201320069800.X。

6）李保安、侯飞飞、邢明皓，一种MABR用复合膜及制备方法，国家发明专利，2013.02.06，专利号：201310048862.7。

7）李保安，中空纤维直接接触膜蒸馏脱盐装置及方法，中国发明专利，专利号：ZL 200510108356.8。

8）Yujun Li, **Baoan Li**, Hsiang-Kuen Mao, Sekhar Mitra, Jiang Yue, Stable dentifrice compositions comprising polyphosphate, fluoride, and stannous ion. (Procter&Gamble Company, USA). PCT Int. Appl. (2001), CODEN: PIXXD2 WO 0168046 A2 20010920 Designated States W: 100 countries. Application: WO 2001-US7695 20010312. Priority: US 2000-189178 20000314

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10）Kamlash Sirkar, **Baoan Li**, Devices and methods using direct contact membrane distillation and vacuum membrane distillation. United States Patent, Serial No. 60/591,956, Applicaton #: 20060076294, Class: 210640000 (USPTO), Assigned Ser. No.: 60/591, 956. (2004)

荣誉与奖励

2020年中国膜工业协会科学技术奖一等奖

2020年中国膜行业推动力领袖奖