



Department: School of Chemical Engineering
Professional field: Chemical Engineering and Technology
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Profile

1988: PhD, Chemical Engineering, East China University of Science and Technology (ECUST), China.

1983: BE, Chemical Engineering, Nanjing University of Technology, China.

1998-present: ECUST, Professor, Director of Chemical Engineering Research Center.

1996-1998: National University of Singapore, Research Fellow, Singapore.

1991-1996: ECUST, Associate Professor, China.

1988-1991: ECUST, Lecturer, China.

Research Field

1. Functional Membrane Materials and Structure Regulation: Study on the mechanism of Composite Membrane Construction and formation, structure regulation of condensed membrane, transfer behavior of nano-channel membrane, surface or interface modification of membrane, alloy membrane, membrane characterization, etc. Synthesis and modification of molecularly imprinted polymers, fluorinated polymers, polyimide, molecular sieves, MOF and other membrane materials
2. Membrane-enhanced separation-reaction process and its application: membrane-enhanced reaction and separation process, and integrated membrane applications such as MBR, Ro, NF, UF, PV, GS, coupled membrane separation of refractory organic wastewater and heavy metal wastewater As well as the recovery and utilization of waste film.
3. Ultra-clean and high-purity materials and engineering, preparation and characterization of ultra-clean and high-purity membrane materials, key technologies for preparation of electronic chemicals below ppb level, etc.

Research results and selected published papers

- (1)Liwei Zhuang, Gance Dai, Zhen-Liang Xu*. 3D simulation of the time-dependent fluid flow and fouling behavior in an industrial hollow fiber membrane module. *AIChE Journal*. 2018, 64 (7):2655-2669.
- (2)Min Liu, Sheng-Hui Liu, Anne Ladegaard Skov, Zhen-Liang Xu*. Estimation of phase separation temperatures for polyethersulfone/solvent/non-solvent systems in RTIPS and membrane properties. *J. Membr. Sci.* 2018, 556:329-341
- (3)Shuang-Mei Xue, Chen-Hao Ji, Zhen-Liang Xu*, Yong-Jian Tang, Rui-Han Li. Chlorine Resistant TFN Nanofiltration Membrane Incorporated with Octadecylamine-grafted GO and Fluorine-containing Monomer. *J. Membr. Sci.* 2018, 545:185-195
- (4)Ming Wang, Yue Cao, Zhen-Liang Xu*, Yu-Xuan Li, Shuang-Mei Xu. Facile fabrication and application of superhydrophilic stainless steel hollow fiber microfiltration membranes. *ACS Sustainable Chemistry & Engineering*. 2017, 5(11):10283-10289
- (5)Yong-Jian Tang, Zhen-Liang Xu*, Shuang-Mei Xue, Yong-Ming Wei, Hu Yang. Tailoring the polyamide backbone stiffness for the preparation of high performance nanofiltration membrane. *J. Membr. Sci.* 2017, 541:483-491.
- (6)Hai-Zhen Zhang, Zhen-Liang Xu*, Hao Ding, Yong-Jian Tang. Positively charged capillary nanofiltration membrane with high rejection for Mg^{2+} and Ca^{2+} and good separation for Mg^{2+} and Li^{+} . *Desalination*. 2017, 420:158-166.
- (7)Yong-Jian Tang, Zhen-Liang Xu*, Shuang-Mei Xue, Yong-Ming Wei, Hu Yang. Tailoring the polypiperazine-amide nanofiltration membrane performance by adding NH_2 -PEG- NH_2 in the aqueous phase. *J. Membr. Sci.* 2017, 538:9-17.
- (8)Sheng-Hui Liu, Min Liu, Zhen-Liang Xu*, Yong-Ming Wei, Xin Guo. A novel PES-TiO₂ hollow fiber hybrid membrane via sol-gel process assisted reverse thermally induced phase separation (RTIPS) method. *J. Membr. Sci.*, 2017, 528:303–315.
- (9)Hai-Zhen Zhang, Zhen-Liang Xu*, Yong-Jian Tang. Highly chlorine-tolerant performance of three-channel capillary nanofiltration membrane with inner skin layer. *J. Membr. Sci.*, 2017, 527:111-120.
- (10)Liwei Zhuang, Hanfei Guo, Gance Dai, Zhen-liang Xu. Effect of the inlet manifold on the performance of a hollow fiber membrane module-A CFD study. *J. Membr. Sci.*, 2017, 526:73-79.
- (11)Chen-Hao Ji, Shuang-Mei Xue, Zhen-Liang Xu*, Xiao-Hua Ma. Novel swelling-resistant sodium alginate membrane branching modified by glycogen for highly aqueous ethanol solution pervaporation. *ACS Appl. Mater. Interfaces*, 2016, 8(40):27243-27253.
- (12)Yue Cao, Ming Wang, Xiao-hua Ma, Shuang-mei Xue, Zhen-liang Xu*. A novel seeding method of interface polymerization assisted dip-coating for the preparation of zeolite NaA membranes on ceramic hollow fiber supports. *ACS Appl. Mater. Interfaces*, 2016, 8(38): 25386-25395.
- (13)Shuang-Mei Xue, Zhen-Liang Xu*, Yong-Jian Tang, Chen-Hao Ji. Polypiperazine-amide nanofiltration membrane modified by different functionalized multi-walled carbon nanotubes (MWCNTs). *ACS Appl. Mater. Interfaces*, 2016, 8 (29):19135–19144.
- (14)Ming Wang, Ming-Ling Huang, Yue Cao, Xiao-Hua Ma, Zhen-Liang Xu*. Fabrication, characterization and separation properties of three-channel stainless steel hollow fiber membrane. *J. Membr. Sci.*, 2016, 515:144-153
- (15)Chen-Hao Ji, Shuang-Mei Xue, Zhen-Liang Xu*, Xiao-Hua Ma. Fabrication and Characterization of Novel Hollow Fiber Catalytic Packing of PFSA-PES-ZrO₂ (shell)-TiO₂ (core) Solid Superacid via Wet-Spinning Method. *Chem. Eng. Sci.*, 2016, 152:1-11
- (16)Zhen Wang, Yong-ming Wei, Zhen-liang Xu*, Yue Cao, Zhe-qin Dong, Xian-lin Shi. Preparation, characterization and solvent resistance of -Al₂O₃/Al₂O₃ hollow fiber NF composite membrane. *J. Membr. Sci.*, 2016, 503:69-80
- (17)Yong-JianTang, Lan-Jie Wang, Zhen-Liang Xu*, Yong-Min Wei, Hu Yang. Novel high-flux thin film composite nanofiltration membranes fabricated by the NaClO pre-oxidation of the mixed diamine monomers of PIP and BHTTM in the aqueous phase solution. *J. Membr. Sci.*, 2016, 502:106–115
- (18)Yong-JianTang, Zhen-Liang Xu*, Shuang-Mei Xue, Yong-Min Wei, Hu Yang. A chlorine-tolerant nanofiltration membrane prepared by the mixed diamine monomers of PIP and BHTTM. *J. Membr. Sci.*, 2016, 498:374–384
- (19)Xiao-Hua Ma, Xin Wen, Si-Wen Gu, Zhen-Liang Xu*. Preparation and characterization of catalytic TiO₂-SPPEsk-PES nanocomposite membranes and kinetics analysis in esterification. *J. Membr. Sci.*, 2013, 430:62-69.
- (20)Pei-Pei Lu, Zhen-Liang Xu*, Hu Yang, Yong-Ming Wei. Preparation and characterization of high-performance perfluorosulfonic acid/SiO₂ nanofibers with catalytic property fabricated via electrospinning. *Ind. Eng. Chem. Res.*, 2012, 51(35):11348-11354.
- (21)Pei-Pei Lu, Zhen-Liang Xu*, Hu Yang, Yong-Ming Wei. Processing-structure-property correlations of polyethersulfone-perfluorosulfonic acid nanofibers fabricated via electrospinning from polymer-nanoparticle suspensions. *Appl. Mater. Interfaces*, 2012, 4:1716-1724.
- (22)Ping-Yun Zhang, Hu Yang, Zhen-Liang Xu* Preparation of polyvinylidene fluoride (PVDF) membranes via nonsolvent induced phase separation process using a tween 80 and H₂O mixture as an additive. *Ind. Eng. Chem. Res.*, 2012, 51:4388-4396.