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基本情况 研究领域 目前课题 代表性著作 发明专利 English Version

基本情况：

一九八四年，清华大学工学学士
一九八九年，清华大学工学博士
一九九二年至一九九三年，荷兰DELFT 大学博士后
一九九八年至一九九九年，日本东北大学客座研究员

研究领域：

研究方向为超临界流体技术、离子液体技术、受限空间内热力学和传递现象，纳米结构材料和印制电子专用化学品。利用超临界流体独特的性质及二氧化碳、水和离子液体的清洁性，致力于高效绿色的新型分离和反应技术及材料制备技术的研究。面向化工清洁生产、化工过程强化、可再生资源的深度转化和新材料领域，在以下几个方面进行了长期的工作：超临界流体中物质溶解、传递和化学反应的基本规律，超临界二氧化碳分离和反应的基础和应用，超临界水反应的基础和应用，功能化离子液体的基础和应用，受限空间内平衡和传质现象，纳米结构材料的基础和应用，二氧化碳的资源化和生物甘油的深度转化，铜基导电墨水的基础和应用。

目前课题：

1. 铜离子导电墨水的基础和应用
2. 银包铜核壳型纳米颗粒及其导电墨水的基础
3. 磁性层包覆的核壳型纳米铝颗粒制备的基础
4. 超临界水氧化技术的放大
5. 离子液体分离同位素二氧化碳$C^{13}O_2$和$C^{12}O_2$
6. 受限空间内固-液相变
7. 纳米结构定形相变材料

代表性著作：

6. Kang Qin, Kai Wang*, Rui Luo, Yang Li, Tao Wang, Dispersion of supercritical carbon dioxide) [Emim][BF4] with a T-junction microtube connector, *Chemical Engineering and Processing, 127 2018), 58-64*

5. Xiaofeng Dai, Wen Xu, Teng Zhang, and Tao Wang, Self-Reducible Cu Nanoparticles for onductive Inks, *Ind. Eng. Chem. Res.*, ***2018**, 57(7), 2508−2516*

4. Wen Xu, Tao Wang, Synergetic effect of blended alkylamines for copper complex ink to form onductive copper film, *Langmuir*, *2017, 33(1), 82-90*

3. Yuping Wu, Tao Wang, Enthalpy of Solid−Liquid Phase Change Confined in Porous Materials, *nd. Eng. Chem. Res.*, ***2016**, 55 (44), pp 11536–11541*

2. Kang Qin, Kai Wang, Rui Luo, Yang Li, Tao Wang, Interfacial tension and wetting properties of -ethyl-3-methylimidazolium tetrafluoroborate in carbon dioxide, from atmospheric pressure to upercritical state, *J. of Supercritical Fluids, 116 (2016) 83–89*

1. Li Han, Tao Wang, Preparation of glycerol monostearate from glycerol carbonate and stearic acid, *SC Advances*, *2016, **6**, 34137 – 34145*

0.Yuping Wu, Tao Wang, The dependence of phase change enthalpy on the pore structure and nterfacial groups in hydrated salts/silica composites via sol–gel, *Journal of Colloid and Interface cience, 448, 100-105, 2015*

9.Yang Li, Kai Wang, Kang Qin and Tao Wang, Beckmann Rearrangement Reaction of yclohexanone Oxime in Sub/Supercritical Water: Byproduct and Selectivity, *RSC Adv., 2015, 5, 5365 – 25371*

8.GUO Qiang, WANG Tao, Study on preparation and thermal properties of sodium nitrate /silica omposite as shape-stabilized phase change material, *Thermochimica Acta, 613 (2015), 66–70*

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6 Kang Qin, Kai Wang, Yang Li, Fanhe Kong and Tao Wang, High pressure phase behavior of 1- thyl-3-methylimidazolium tetrafluoroborate and carbon dioxide system, *RSC Adv.*, *2015, 5, 32416 – 2420*

5. Yuping Wu, Tao Wang, Preparation and characterization of hydrated salts/silica composite as hape-stabilized phase change material via sol-gel process, *Thermochimica Acta, 591, 10–15, 2014*

4. Qiang Guo, Tao Wang，Preparation and Characterization of Sodium Sulfate/Silica Composite as Shape-stabilized Phase Change Material by Sol-gel Method, *Chinese Journal of Chemical ngineering, 22(3), 360-364, 2014*

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2. Jiabo Li, Tao Wang，Chemical equilibrium of glycerol carbonate synthesis from glycerol，*J. hem. Thermodynamics 43 (2011) 731–736*

1. Jiabo Li, Tao Wang，On the deactivation of alkali solid catalysts for the synthesis of glycerol arbonate from glycerol and dimethyl carbonate, *Reac. Kinet. Mech. Cat. (2011) 102:113–126*

0. Jiabo Li, Tao Wang，Coupling reaction and azeotropic distillation for synthesis of glycerol arbonate from glycerol and dimethyl carbonate, *Chemical Engineering & Processing: Process ntensification, 49 (2010), pp. 530-535*

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. T Wang, YF Guan, Extraction of arsenic-containing anions by supercritical CO2 with ion-pairing, *'HEMICAL ENGINEERING JOURNAL 108 (1-2): 145-153 APR 1 2005*
. HB Xing, T Wang, ZH Zhou, YY Dai, Novel bronsted-acidic ionic liquids for esterifications, *NDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH 44 (11): 4147-4150 MAY 25 2005*

发明专利：

9. 王涛，许文，一种提高铜离子墨水稳定性和铜膜导电性的方法，ZL201710182920.3
8. 王涛，戴小凤，一种银包铜纳米颗粒的制备方法，ZL201611072652.1
7. 王涛，郭强，以稻壳灰为原料制备硫酸钠/氧化硅定形相变材料的方法，ZL200910236014.2
6. 王涛，周震寰，邢华斌，一种离子液体催化制备柠檬酸三丁酯的方法，ZL200510086546.4
5. 邢华斌，王涛，周震寰，戴猷元，离子液体催化合成D,L－α－生育酚的方法，ZL200510011440.8
4. 周震寰，王涛，邢华斌，一种卤化烷基咪唑型离子液体的制备方法，ZL200510011377.8
3. 王涛，李婷，以稻壳灰为原料制备疏水性二氧化硅气凝胶的方法，ZL200510012186.3
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1. 王涛，唐琪，以稻壳灰为原料制备二氧化硅气凝胶的方法，ZL03127920.1

Back