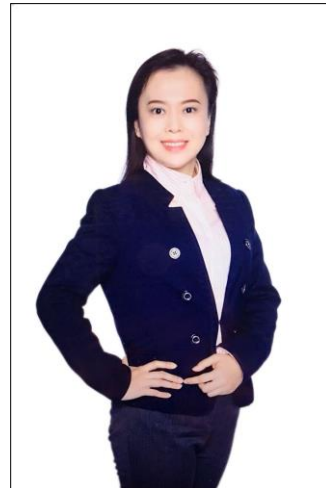




纪娜，天津大学环境科学与工程学院教授，博士生导师，天津市青年人才，政协天津市津南区常委，中国农工民主党党员兼中央生态环境工作委员会委员。博士毕业于中国科学院大连化学物理研究所，曾留学于德国马普学会煤化学研究所、美国特拉华大学化学工程系，担任博士后研究助理。曾兼任天津市和平区生态环境局副局长挂职职务，目前担任环境科学与工程学院环境工程系副主任，全国石油化工行业生物基油气重点实验室副主任等职务。主要从事环境工程、化学工程、工业催化、新能源开发等工作，目前主持国家级科研项目 5 项，省部级基金项目 5 项，发表高水平 SCI 论文 70 余篇，其中封面论文 10 篇，H-index 指数 28。申请专利 60 余项，已授权专利 15 项，包括 3 项 PCT 国际专利，研究成果受到学术界及产业界的广泛关注。



研究课题包括：（1）生物质可再生资源的催化转化利用技术；（2）生物燃料及航空煤油的可再生催化合成技术。围绕上述研究课题，近年来在生物质催化转化领域国际高水平学术期刊发表研究论文70余篇，包括*Angew. Chem. Int. Ed.*, *ACS Catalysis*, *Applied Catalysis B: Environmental*, *ChemSusChem*, *Green Chemistry*, *Journal of Catalysis*, *Journal of Energy Chemistry*, *Renewable & Sustainable Energy Reviews*, *ACS Sustainable Chemistry & Engineering*等多篇国际知名期刊，论文总引用率大于**2000余次**，其中作为第一作者发表的关于**首次发现**纤维素一步催化转化制取乙二醇的研究成果曾作为封面文章发表于《德国应用化学》期刊*Angew. Chem. Int. Ed.* 单篇论文引用率大于**600次**，受到学术界及产业界的广泛关注。

目前，纪娜博士的研究兴趣仍集中在**生物质催化转化领域**，致力于开发生物质高效转化的新型催化剂材料以及绿色环保的高效转化过程，研究课题具有重要的理论研究价值及广阔的应用前景，力求为生物质可再生资源转化利用提供一条全新的绿色转化途径。





基本信息

姓名/Name: 纪娜/Na Ji

学历/Degree: 博士/PhD

职称/Position: 教授/Professor

专业/Major: 环境工程/Environmental Engineering

所在系/Department: 环境工程系/Department of Environmental Engineering

通讯地址/Address: 天津大学环境科学与工程学院/School of Environmental Science and Engineering

电子信箱: jina@tju.edu.cn



学习与工作经历

- ★ 2013.12-今, 天津大学环境科学与工程学院, 教授, 博士生导师
- ★ 2012.09-2013.11, 美国特拉华大学 化学工程系, 研究助理
- ★ 2011.02-2012.08, 德国马普学会 煤化学研究所, 博士后
- ★ 2005.09-2011.01, 中国科学院 大连化学物理研究所, 博士

主要研究方向

课题组围绕“生物质可再生能源转化利用”展开一系列研究工作, 主要包括:

☆ 生物质低温催化转化制取生物燃料及化学品

- ◎ 纤维素催化转化制取化学品
- ◎ 木质素催化转化制取芳香族化合物
- ◎ 半纤维素加氢脱氧反应制取生物燃料

☆ 生物质高温热解制取生物燃气

☆ 新型催化剂材料的开发及在生物质转化反应中的应用

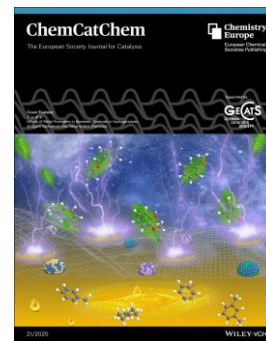
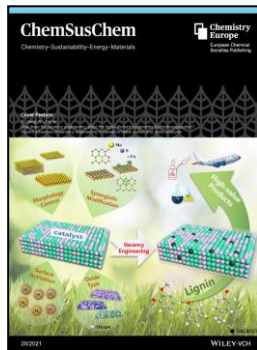
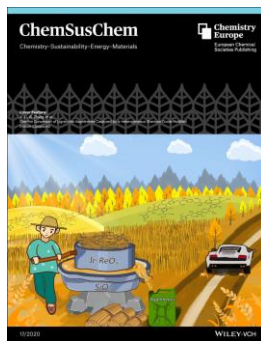
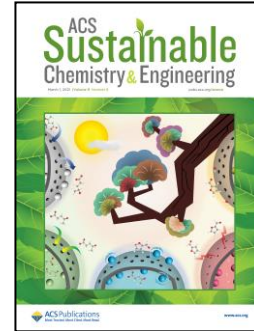
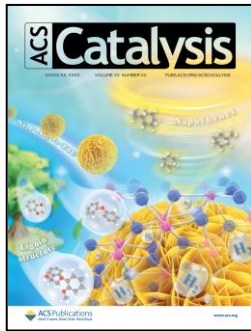


图: 生物质催化转化课题组研究领域





《代表作封面汇总》





科研项目情况（主持）

1. 国家自然科学基金面上项目，22178258，单点二硫化钨催化剂的构建及其催化木质素转化制取 C8-C16 航油环烃，2022/01-2025/12，60 万元，在研，负责人；
2. 国家自然科学基金面上项目，21975181，高效稳定水滑石基硫化物选择性催化木质素加氢脱氧制芳烃研究，2020/01-2023/12，65 万元，在研，负责人；
3. 国家重点研发项目“纤维素类生物质催化制备生物航油技术与示范”，2018YFB1501500，木质素催化转化制取芳烃和环烷烃及功能材料，2019/02-2023/01，120 万元，在研，子课题负责人；
4. 国家自然科学基金重大项目，21690083，生物质催化定向转化制备重要含氧小分子化合物——木质素的绿色催化解聚制备苯酚等重要酚类化合物，2017/01-2021/12，50 万元，在研，子课题负责人；
5. 国家自然科学基金青年基金，21503144，过渡金属硫化物催化剂上木质素催化转化反应研究，2016/01-2018/12，25.2 万元，完成，负责人；
6. 天津市自然科学基金项目青年基金，16JCQNJC05400，硫化钼催化剂的层状可控合成及其在木质素转化中的应用，2016/01-2018/12，6 万元，完成，负责人；
7. 教育部留学回国科研启动经费，木质素平台化合物在硫化钼催化剂上加氢脱氧反应研究，2015/03-2018/03，3 万元，完成，负责人；
8. 制浆造纸工程国家重点实验室开放课题，铈基固体酸改性二硫化钼催化剂上木质素定向转化制取芳香化合物，202113，2021/01-2021/12，3 万元，负责人；
9. 广东省新能源和可再生能源研究开发与应用重点实验室开放课题，高效稳定磷化镍催化剂低温催化木质素制取航油段环烷烃，2021/01-2021/12，3 万元，负责人；
10. 内燃机燃烧学国家重点实验室开放课题，生物燃料制备及其内燃机性能影响研究，2015/01-2016/12，10 万元，完成，负责人；
11. 校企横向合作（捐赠），生物质新能源开发利用，2021/05-2026/05，50 万元，负责人；
12. 院校横向合作，木质素催化转化制取高附加值化学品，2014/10-2018/09，50





万元，完成，负责人；

13. 天津大学自主创新基金，2021XT-0013，生物质固态燃油添加剂产品研发与成果转化，2021/01-2021/12，5 万元，完成，负责人；
14. 天津大学自主创新基金，2020XZC-0052，生物质固态燃油添加剂产学研合作平台建设，2020/01-2020/12，5 万元，完成，负责人；
15. 天津大学自主创新基金，2019XZC-0088，农业秸秆废弃物资源化利用研究，2019/01-2019/12，5 万元，完成，负责人；
16. 天津大学自主创新基金，2018XZC-0037，造纸黑液木质素综合利用研究，2018/01-2018/12，10 万元，完成，负责人；
17. 天津大学自主创新基金，2018XYF-0102，高稳定性类石墨烯结构硫化钼的设计合成及其木质素加氢脱氧反应性能，2018/01-2018/12，3 万元，完成，负责人；
18. 天津大学自主创新基金，2017XZS-0039，大型客机座舱空气过滤器材研发，2017/01-2017/12，40 万元，完成，负责人；
19. 天津大学自主创新基金，2017XZY-0058，燃料的催化合成研究，2017/01-2017/12，5 万元，完成，负责人；
20. 天津大学自主创新基金，2016XR-0003，木质素催化转化制取高附加值化学品，2017/01-2018/12，10 万元，完成，负责人；

科研项目情况（参与）

1. 国家科技重大专项子课题，污泥高浓度厌氧消化及热能利用系统研究，2015/01-2018/12，170 万元，完成，参与；
2. 天津大学自主创新基金，2017XRG-0033，CO₂ 捕集及资源化再利用，2017/01-2018/12，10 万元，完成，参与；
3. 天津大学自主创新基金，2018XZC-0082，基于文献计量的可持续城市基础设施技术演化分析，2018/01-2018/12，10 万元，完成，参与；
4. 天津大学自主创新基金，2015XZC-0006，低温抗硫脱硝催化剂的设计制备及应用，2015/01-2016/12，10 万元，完成，参与；
5. 美国 Air Liquide 公司与特拉华大学联合项目，ISER432119，糠醛加氢脱氧制能源化学品催化反应研究，2012/01-2014/12，30 万美元，已结题，参与；
6. 德国洪堡基金会 Sofja Kovalevskaja 研究基金，Award 2010，木质素催化转化制取燃料及能源化学品，2010/01-2015/12，550 万欧元，已结题，参与；



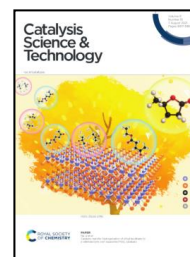
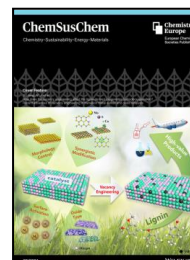
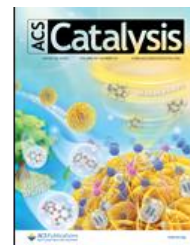


7. 国家自然科学基金青年基金，20903089，碳化钨催化剂上纤维素催化转化制乙二醇反应研究，2009/01-2011/12，21 万元，已结题，参与；
8. 国家重点基础研究发展计划项目（973 计划）2009CB226102，节能减排和新能源探索基础研究，2009/01-2013/12，882 万，已结题，参与；
9. 国家杰出青年基金，20903089，过渡金属碳化物、氮化物、磷化物催化剂催化性能研究，2003/01-2007/12，100 万，已结题，参与。

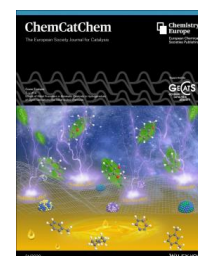
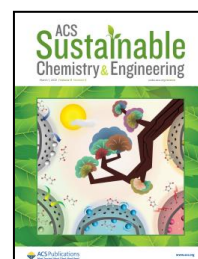


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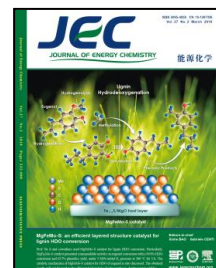
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2. Zhichao Jia¹, **Na Ji**^{1,*}, Xinyong Diao, Xinxin Li, Yujun Zhao, Xuebin Lu, Qingling Liu, Caixia Liu, Guanyi Chen, Longlong Ma, Shurong Wang, Chunfeng Song^{*}, Changzhi Li^{*}, Highly selective hydrodeoxygenation of lignin to Naphthenes over three-dimensional flower-like Ni₂P derived from hydrotalcite, **ACS Catalysis**, 2022, **【Cover Story】** <https://doi.org/10.1021/acscatal.1c05495>
3. Xiaotong Wang, Zhihao Yu, Lei Ye, Ming Zhang, Jian Xiong, Rui Zhang, Xiaoyun Li, **Na Ji**^{*}, Xuebin Lu, Layered Double Hydroxide-Derived Bimetallic Ni–Cu Catalysts Prompted the Efficient Conversion of γ -Valerolactone to 2-Methyltetrahydrofuran, **ChemCatChem**, 2021, <https://doi.org/10.1002/cctc.202101441>
4. Shanshan Xiong, Chao Luo, Zhihao Yu, **Na Ji**^{*}, Lingjun Zhu, Shurong Wang^{*}, Novel Dual Functional Carbon-based Solid Acid-Induced Hydrothermal Conversion of Biomass Saccharides: Catalyst Rational Design and Kinetic Analysis, **Green Chemistry**, 2021, IF=10.182, **【Cover Story】** <https://doi.org/10.1039/D1GC01968F>
5. Yue Rong, **Na Ji**^{*}, Zhihao Yu, Xinyong Diao, Hanyang Li, Yaxuan Lei, Xuebin Lu, Atsushi Fukuoka, Lignin Amination Valorization: Heterogeneous Catalytic Synthesis of Aniline and Benzylamine from Lignin-derived Chemicals, **Green Chemistry**, 2021, 23, 6761-6788, IF=10.182, <https://doi.org/10.1039/D1GC02741G>
6. Sinan Jiang, **Na Ji**^{*}, Xinyong Diao, Hanyang Li, Yue Rong, Yaxuan Lei, Zhihao Yu, Vacancy Engineering in Transition Metal Sulfide and Oxide Catalysts for Hydrodeoxygenation of Lignin-Derived Oxygenates, **ChemSusChem**, 2021, IF=8.928 **【Cover Story】** <https://doi.org/10.1002/cssc.202101362>
7. Xinyong Diao¹, **Na Ji**^{1,*}, Tingting Li, Zhichao Jia, Sinan Jiang, Zhenjiao Wang, Chunfeng Song, Caixia Liu, Xuebin Lu, Qingling Liu, Rational Design of Oligomeric MoO₃ in SnO₂ lattices for Selective Hydrodeoxygenation of Lignin Derivatives into monophenols, **Journal of Catalysis**, 2021, 401, 234-251, (共同一作), IF=7.92, <https://doi.org/10.1016/j.jcat.2021.07.029>
8. **Na Ji**^{*}, Xinyong Diao, Zhihao Yu, Zhenyu Liu, Sinan Jiang, Xuebin Lu, Chunfeng Song, Qingling Liu, Degang Ma, Caixia Liu, Catalytic Transfer Hydrogenation of Ethyl



- Levulinic acid to γ -Valerolactone over Supported MoS₂ Catalysts, *Catal. Sci. Technol.*, **2021**, 11, 5062-5076, IF=6.119, **【Cover Story】** <https://doi.org/10.1039/D1CY00524C>
9. Umme Marium Ahmad¹, Na Ji^{*1}, Hanyang Li, Qiong Wu, Chunfeng Song, Qingling Liu, Degang Ma, Xuebin Lu^{*}, Can lignin be transformed into agrochemicals? Recent advances in the agricultural applications of lignin, *Industrial Crops & Products*, **2021**, 170, 113646. (共同一作) IF=5.645, <https://doi.org/10.1016/j.indcrop.2021.113646>
 10. Na Ji^{*}, Zhenjiao Wang, Xinyong Diao, Zhichao Jia, Tingting Li, Yujun Zhao, Qingling Liu, Xuebin Lu, Degang Ma, Chunfeng Song, Highly selective demethylation of anisole to phenol over H₄Nb₂O₇ modified MoS₂ catalyst, *Catal. Sci. Technol.*, **2021**, 11, 800-809, **【Cover Story】** IF=6.119, <https://doi.org/10.1039/D0CY01972K>
 11. Zhihao Yu, Xuebin Lu^{*}, Linhao Sun, Jian Xiong, Lei Ye, Xiaoyun Li, Rui Zhang, Na Ji^{*}, Metal-Loaded Hollow Carbon Nanostructures as Nanoreactors: Microenvironment Effects and Prospects for Biomass Hydrogenation Applications, *ACS Sustainable Chem. Eng.* **2021**, 9, 8, 2990–3010, **【Cover Story】** IF=8.198, <https://doi.org/10.1021/acssuschemeng.0c08422>
 12. Tingting Li, Na Ji^{*}, Zhichao Jia, Xinyong Diao, Zhenjiao Wang, Qingling Liu, Chunfeng Song, Xuebin Lu^{*}, Effects of metal promoters in bimetallic catalysts in hydrogenolysis of lignin derivatives into value-added chemicals, *ChemCatChem*, **2020**, 12, 5288-5302, **【Cover Story】** IF=5.686, <http://dx.doi.org/10.1002/cctc.202001124>
 13. Na Ji, Xinyong Diao, Xinxin Li, Zhichao Jia, Yujun Zhao, Xuebin Lu, Chunfeng Song, Qingling Liu^{*}, Changzhi Li^{*}, Toward Alkylphenols Production: Lignin Depolymerization Coupling with Methoxy Removal over Supported MoS₂ Catalyst, *Ind. Eng. Chem. Res.* **2020**, 59, 17287-17299, IF=3.720, <https://dx.doi.org/10.1021/acs.iecr.0c01255>
 14. Xinxin Li, Bo Zhang, Xiaoli Pan, Jianwei Ji, Yujing Ren, Hua Wang, Na Ji^{*}, Qiyang Liu, Changzhi Li^{*}, One-Pot Conversion of Lignin into Naphthenes Catalyzed by a Heterogeneous Rhenium Oxide-Modified Iridium Compound. *ChemSusChem*, **2020**, 13, 4409-4419, **【Cover Story】** IF=8.928, <https://doi.org/10.1002/cssc.202001700>
 15. Na Ji, Zhenyu Liu, Xinyong Diao, Jinrong Bao, Zhihao Yu, Chunfeng Song, Qingling Liu, Degang Ma, Xuebin Lu^{*}, A novel Ni/AC catalyst prepared by MOCVD method for hydrogenation of ethyl levulinic acid to γ -valerolactone, *Molecular Catalysis*, **2020**, 495, 111155, 1-9, IF=5.062, <https://doi.org/10.1016/j.mcat.2020.111155>
 16. Zhihao Yu, Xuebin Lu^{*}, Xiaotong Wang, Jian Xiong, Xiaoyun Li, Rui Zhang, Na Ji^{*}, Metal-Catalyzed Hydrogenation of Biomass-derived Furfural: Particle Size Effects and



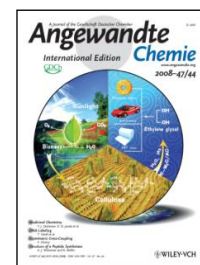
- Regulation Strategies, *ChemSusChem*, **2020**, 13, 5185-5198. DOI: 10.1002/cssc.202001467, IF=8.928, <https://doi.org/10.1002/cssc.202001467>
17. Zhihao Yu, Xuebin Lu, Jian Xiong, Xiaoyun Li, Hui Bai, **Na Ji***, Heterogeneous Catalytic Hydrogenation of Levulinic Acid to γ -Valerolactone with Formic Acid as Internal Hydrogen Source, *ChemSusChem*, **2020**, 13, 2916-2930. IF=8.928, <https://doi.org/10.1002/cssc.202000175>
18. Zhihao Yu, Xuebin Lu, Hui Bai, Jian Xiong, Wenli Feng, **Na Ji***, Effects of Solid Acid Supports on the Bifunctional Catalysis of Levulinic Acid to γ -Valerolactone: Catalytic Activity and Stability, *Chem Asian J.*, **2020**, 15, 1182-1201. IF=4.568, <https://doi.org/10.1002/asia.202000006>
19. Zhihao Yu, Xuebin Lu, Jian Xiong, **Na Ji***, Transformation of Levulinic Acid to Valeric Biofuels: A Review on Heterogeneous Bifunctional Catalytic Systems, *ChemSusChem*, **2019**, 12, 3915-3930. IF=8.928, <https://doi.org/10.1002/cssc.201901522>
20. Zhihao Yu, Xuebin Lu*, Chen Liu, Yiwen Han, **Na Ji***, Synthesis of γ -valerolactone from different biomass-derived feedstocks: Recent advances on reaction mechanisms and catalytic systems, *Renewable and Sustainable Energy Reviews*, **2019**, 112, 140-157. IF=14.982, <https://doi.org/10.1016/j.rser.2019.05.039>
21. Xinyong Diao, **Na Ji***, Mingyuan Zheng, Qingling Liu, Chunfeng Song, Yibo Huang, Qing Zhang, Alazar Alemayehu, Luoyun Zhang, Changhai Liang*, MgFe hydrotalcites-derived layered structure iron molybdenum sulfide catalysts for eugenol hydrodeoxygenation to produce phenolic chemicals, *Journal of Energy Chemistry* 27, **2018**, 600–610. **【Cover Story】** IF=9.676, <https://doi.org/10.1016/j.jechem.2017.07.008>
22. Hui Ding, Wei Ye, Xianqin Wang, Lujun Li, Dan Liu, Jianzhou Gui, Chunfeng Song, **Na Ji***, Process Intensification of Transesterification for Biodiesel production from Palm Oil: Microwave Irradiation on Transesterification Reaction catalyzed by Acidic Imidazolium Ionic liquids, *Energy*, **2018**, 144, 957-967. IF=7.147, <https://doi.org/10.1016/j.energy.2017.12.072>
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代表作（早期）

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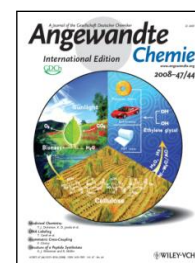




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主要学术成就、奖励及荣誉（天津大学）

- 1) 2021 年，主讲课程《固体废物处理》荣获天津大学第三批**课程思政**建设项目，负责人；
- 2) 2019 年，主讲全英文课程《环境催化与功能材料表征分析方法》荣获天津大学研究生国际化教学体系建设项目-**全英文在线精品课程**，负责人；
- 3) 2019 年，主讲课程《固体废物处理》荣获天津市一流本科线下建设课程；
- 4) 2019 年，天津市津南区“**优秀政协委员**”；
- 5) 2019 年，天津大学环境学院**优秀全员导师**；
- 6) 2018 年，天津大学环境学院本科生**优秀班导师**；
- 7) 2018 年，**天津大学教学成果奖二等奖**，《环境催化与功能材料表征分析方法》创新课程与全英文授课体系建设，负责人；
- 8) 2018 年，主讲全英文课程《环境催化与功能材料表征分析方法》荣获“**天津市来华留学英语授课品牌课程**”，负责人；
- 9) 2017 年，天津大学第二十三届“**十佳杰出青年**”教工；
- 10) 2017 年，天津大学“**优秀教书育人奖**”；
- 11) 2017 年荣获天津大学优秀硕士论文指导教师；指导学生宋静静硕士毕业论文获得天津大学优秀硕士论文；
- 12) 2017 年，天津大学环境学院**桑德奖教金**；
- 13) 2016 年，天津大学环境科学与工程专业**全英文研究生专业建设**，负责人；
- 14) 2015 年，天津大学北洋青年骨干教师。





主要学术成就、奖励及荣誉（早期）

- ◇ 2011-2012 年，德国马普学会奖学金 (Max-Planck Fellowship)
- ◇ 2011 年，大连化物所超百次引用科技论文奖
- ◇ 2010 年，中国科学院优秀博士毕业生
- ◇ 2010 年，延长石油集团优秀博士生奖学金一等奖
- ◇ 2009 年，辽宁省自然科学学术成果奖一等奖
- ◇ 2009 年，被选为“中国优秀博士生代表团”成员，赴德国林岛参加“第 59 届诺贝尔奖获奖者大会”
- ◇ 2009 年，卢嘉锡优秀研究生奖一等奖
- ◇ 2006 年，中国科学院研究生院“三好学生”

