

导师简介：马嘉璧 副教授 博导

电子邮件：majiabi@bit.edu.cn

主要经历：

2004-2008 吉林大学 化学学院 学士

2008-2013 中国科学院化学研究所 博士

2011/9-2013/1 柏林工业大学

研究方向：

- 1) 团簇化学。主要利用实验和理论计算相结合的手段研究过渡金属氮、氧化物团簇结构及反应活性。CO、N₂、碳氢化物等稳定分子的（催化）活化。实验主要使用原子分子簇原位反应装置（如下图）、光电子能谱等仪器手段。

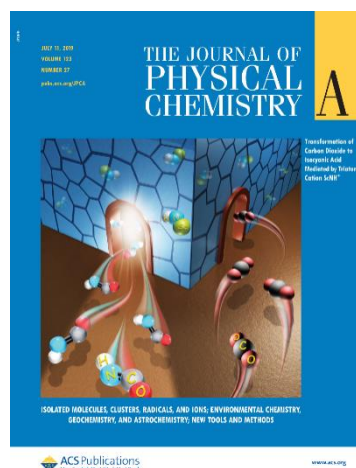
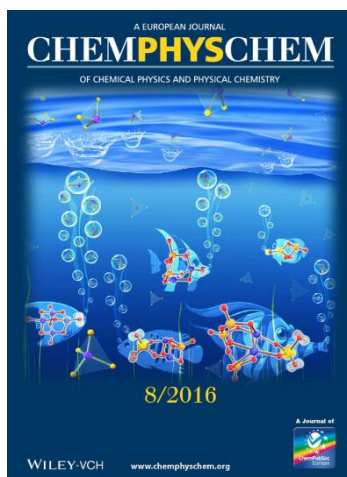
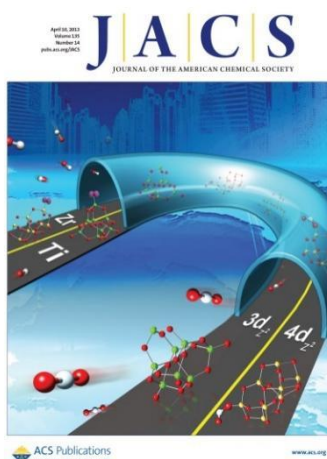


- 2) 大气化学。利用团簇模型对大气中重要物理化学过程进行模拟研究，为认清我国雾霾形成机制提供重要理论依据。

主持课题：

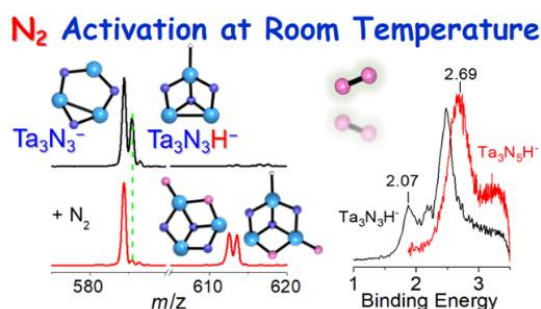
1. 国家自然科学基金委重大研究计划
2. 国家重点研发计划--科技部（青年973）
3. 国家自然科学基金
4. 北京市自然科学基金
5. 北京分子科学国家实验室开放课题基金

主要研究成果:



代表论文:

- [1] H. Zhou, X.-F. Yi, Y. Hui, L. Wang*, W. Chen, Y.-C. Qin, M. Wang, **J.-B. Ma**, X.-F. Chu, Y.-Q. Wang, X. Hong, Z.-F. Chen, X.-J. Meng*, H. Wang, Q.-Y. Zhu, L.-J. Song, A.-M. Zheng*, F.-S. Xiao*, "Isolated Boron in Zeolite for Oxidative Dehydrogenation of Propane", *Science* **2021**, 372, 76–80.
- [2] M. Wang, L.-Y. Chu, Z.-Y. Li, Antonis M Messinis, Y.-Q. Ding, L.-R. Hu*, **J.-B. Ma***, "Dinitrogen and Carbon Dioxide Activation to Form C–N Bonds at Room Temperature: A New Mechanism Revealed by Experimental and Theoretical Studies", *J. Phys. Chem. Lett.* **2021**, 12, 3490–3496.
- [3] H. Wang, H. Zhou, S.-Q. Li, X. Ge, L. Wang*, Z. Jin, C.-T. Wang, **J.-B. Ma***, X.-F. Chu, X.-J. Meng, W. Zhang*, and F.-S. Xiao*. "Strong Oxide-Support Interactions Accelerate Propane Selective Dehydrogenation by Modulating the Surface Oxygen", *ACS Catal.*, **2020**, 10, 10559–10569.
- [3] Y. Zhao, J.-T. Cui, M. Wang, D.Y. Valdivielso, A. Fielicke*, L.-R. Hu*, X. Cheng, Q.-Y. Liu, Z.-Y. Li, S.-G. He, **J.-B. Ma***, "Dinitrogen Fixation and Reduction by $Ta_3N_3H_{0.1}^-$ Cluster Anions at Room Temperature: Hydrogen-Assisted Enhancement of Reactivity", *J. Am. Chem. Soc.* **2019**, 141, 12592–12600.



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- [5] M. Wang, H.-Y. Zhou, J.-T. Cui, C.-X. Sun, **J.-B. Ma***, "The study on the reaction of gas-phase Cr_xN^- ($x=2-7$) anion clusters with CO_2 ", *Sci. Sin. Chim.* **2020**, 50, 1169–1176.
- [6] S.-Q. Li, S.-Y. Lv, H.-Y. Zhou, Y.-Q. Ding, Q.-Y. Liu, **J.-B. Ma***, "Oxidation of Isoprene by Titanium Oxide Cluster Cations in the Gas Phase", *Phys. Chem. Chem. Phys.*, **2020**, 22, 27357–27363.
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[8] M. Wang, C.-X. Sun, J.-T. Cui, Y. Zhang, **J.-B. Ma***, “Clean and Efficient Transformation of CO₂ to Isocyanic Acid: The Important Role of Triatomic Cation ScNH²⁺”, *J. Phys. Chem. A* **2019**, *123*, 5762–5767. (Cover Article)

[9] M. Wang, C.-X. Sun, Y. Zhao, J.-T. Cui, **J.-B. Ma***, “Efficient Liberation of Ammonia from Thermal Reaction of ScNH⁺ Cations and Water”, *J. Phys. Chem. A* **2019**, *123*, 7576–7581.

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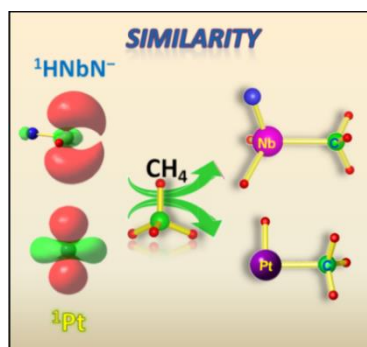
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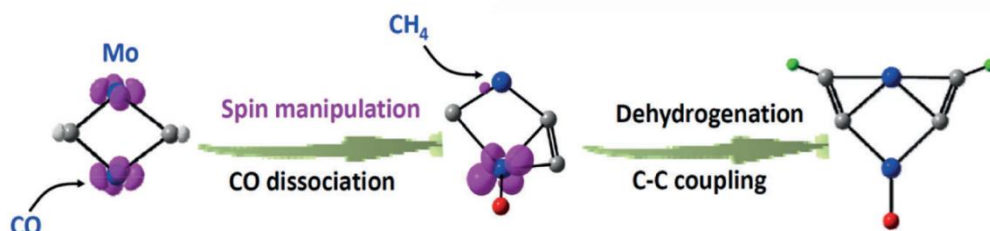
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[19] **J.-B. Ma***, J.-H. Meng, S.-G. He*, “Methane Activation Mediated by a Series of Cerium-Vanadium Bimetallic Oxide Cluster Cations: Tuning Reactivity by Doping”, *ChemPhysChem* **2016**, *17*, 1112–1118. (Cover Article)

[20] **J.-B. Ma***, L.-L. Xu, J.-H. Meng, S.-G. He*, “Dehydrogenation of Propylene Mediated by CeVO₄⁺: An Interesting Example for the Chemistry of Binary Ce-V Transition-Metal Oxide Cluster Cations”, *Int. J. Mass*

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- [26] **J.-B. Ma**, Z.-C. Wang, M. Schlangen, S.-G. He*, H. Schwarz*, “On the Origin of the Surprisingly Sluggish Redox Reaction of the N₂O/CO Couple Mediated by [Y₂O₂]⁺ and [YAlO₂]⁺ Cluster Ions in the Gas Phase. *Angew. Chem. Int. Ed.* **2013**, *52*, 1226–1230.
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- [28] **J.-B. Ma**, Z.-C. Wang, M. Schlangen, S.-G. He*, and H. Schwarz*, “Thermal Reactions of the Heteronuclear Oxide Cluster YAlO₃⁺ with Methane: Increasing the Reactivity of Y₂O₃⁺ and the Selectivity of Al₂O₃⁺ by Doping”, *Angew. Chem. Int. Ed.* **2012**, *51*, 5991–5994.
- [29] Z.-C. Wang, N. Dietl, R. Kretschmer, **J.-B. Ma**, T. Weiske, M. Schlangen*, H. Schwarz*, “Direct Methane to Formaldehyde Conversion Mediated by the Al₂O₃⁺ Cluster at Room-Temperature”, *Angew. Chem. Int. Ed.* **2012**, *51*, 3703–3707.

学生获奖情况:

毕业生/毕业时间	获奖时间	获奖情况	在读学生	获奖时间	获奖情况
许琳琳/2017-06 2017年陕西省选调生	2014-2015学年	研究生骨干培训优秀学员称号	王 明	2017-2018学年	北京理工大学二等学业奖学金
	2015-2016学年	优秀研究生干部 国家奖学金		2018-2019学年	北京理工大学一等学业奖学金 金发科技奖学金 国家奖学金
	2016-2017学年	北京市优秀毕业生 北京理工大学研究生优秀学位论文		2019-2020学年	北京理工大学一等学业奖学金 优秀研究生
胡继闯/2018-06 上海裕达实业有限公司 卫星装备研究所	2015-2016学年	北京理工大学二等学业奖学金	李树强	2018-2019学年	北京理工大学二等学业奖学金
	2016-2017学年	北京理工大学二等学业奖学金 国家奖学金		2019-2020学年	北京理工大学二等学业奖学金
赵 越/2019-06 天津南开中学	2017-2018学年	优秀研究生 北京理工大学一等学业奖学金	周海岩	2018-2019学年	北京理工大学二等学业奖学金
	2016-2017学年	北京理工大学一等学业奖学金		2019-2020学年	北京理工大学二等学业奖学金
	2017-2018学年	北京理工大学二等学业奖学金	李 颖 褚兰叶	2019-2020学年	北京理工大学一等学业奖学金
2018-2019学年	北京理工大学二等学业奖学金 优秀研究生	2019-2020学年		北京理工大学二等学业奖学金	
崔佳桐/2019-06 石家庄石药集团	2016-2017学年	北京理工大学二等学业奖学金			
	2017-2018学年	北京理工大学二等学业奖学金			
	2018-2019学年	北京理工大学二等学业奖学金 国家奖学金 2019届夏季优秀毕业生 北京理工大学研究生优秀学位论文			
孙传新/2019-06 潍柴股份有限公司	2017-2018学年	北京理工大学二等学业奖学金			

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