Jin-Pei Cheng

Introduction

Jin-Pei Cheng, born in 1948 in Tianjin, China. Received M.Sc. from Nankai University in 1981 with Prof. C-H Kao (Harvard PhD with Woodward) and Ph.D from Northwestern University (Evanston, Ill. USA) in 1987 with Prof. Fred. G. Bordwell. He then spent one and a half years as a postdoctoral fellow at Duke University with Prof. Edward M. Arnett.

Cheng started his academic career at the Department of Chemistry, Nankai University in 1988 as an associate professor. Since 1990, he has been a full professor at Nankai University. He served as vice-president (academic, research and international) of Nankai University during 1995-2000. From 2000 to 2008, he was the Vice Minister (basic research) of Ministry of Science and Technology of China, while still maintaining his professorship and active research at Nankai University. He is adjunct professors of Institute of Chemistry, Chinese Academy of Sciences (ICCAS, since 2002), Utah State University (since 2007) and National Defence S&T University (since 2011). In 2012, he joined in Tsinghua University as a professor and serves as the director of the Centre of Basic Molecular Science (CBMS).

In 2001, Cheng was elected the Member of the Chinese Academy of Sciences. In the same year, he was voted by the Third World Academy of Sciences (TWAS) to be a Member. Cheng has also been a fellow of Royal Chemical Society of UK since 2007 and currently the member of the Board of Chairmen of the Chinese Academy of Sciences (CAS).

He served as an associate editor for J. Phys. Org. Chem. during 2007–2009 and an advisory board member of Acc. Chem. Res. during 2008-2013.

Prof. Cheng has co-authored over 200 papers in peer reviewed scientific journals.

Research Interests

Prof. Cheng's research primarily focuses on quantitative measurement and understanding of the energetics of chemical bonds and reactions. In recent years, his research interest is extended to include the physical organic chemistry in ionic liquids and in chiral organocatalysis. His main contributions to the relevant research fields are reflected by the follows.

- **Methodologies to determine homolytic and heterolytic bond dissociation energies of organic molecules and reactive intermediates in molecular and ionic solvents**
- **Establishment of various absolute bond energetic scales including scales of organic hydrides**
- **Chiral organocatalysis**
- **Reaction mechanisms, Nitric oxide (NO) chemistry, NADPH model reactions, etc.**

Appendix : Selected Publications

[1] Ni, X.; Li, X.; Wang, Z. & Cheng, J. P. **Squaramide equilibrium acidities in DMSO.** *Org. Lett.* **2014**, 16, 1786-1789.

[2] Li, X.; Lin, M. H.; Han, Y.; Wang, F. & Cheng, J. P. **Asymmetric Diels-Alder reaction of 3-olefinic benzofuran-2-ones and polyenals: Construction of chiral spirocyclic benzofuran-2-ones.** *Org. Lett.* **2014**, 16, 114-117.

[3] Wang, Z.; Deng, H.; Li, X.; Ji, P. J. & Cheng, J. P. **Standard and absolute pK_a scales of substituted benzoic acids in room temperature ionic liquids.** *J. Org. Chem.* **2013**, 78, 12487-12493.

[4] Xue, X. S.; Li, X.; Yu, A.; Yang, C.; Song, C. & Cheng, J.P. **Mechanism and selectivity of bioinspiredcinchona alkaloid derivatives catalyzedasymmetric olefin isomerization: A computational study**. *J. Am. Chem. Soc.* **2013**, *135*, 7462-7473.

[5] Lv, J.; Zhang, L.; Luo, S. Z. & Cheng, J. P. **Switchable Diastereoselectivity in Enantioselective [4+2] Cycloadditions with Simple Olefins by Asymmetric Binary Acid Catalysis.** *Angew. Chem. Int. Ed.* **2013**, 52, 9786-9790.

[6] Dong, N.; Li, X.; Wang, F. & Cheng, J. P. **Asymmetric Michael-Aldoltandem reaction of 2-substituted benzofuran-3-ones and enones: A facile synthesis of Griseofulvinanalogues.** *Org. Lett.* **2013**,15, 4896-4899.

[7] Cui, L.; Zhu, Y.; Luo, S. Z. & Cheng, J. P. **Primary–tertiary diamine/Brønstedacid catalyzed C–C coupling between para-vinylanilines and aldehydes.** *Chem. Eur. J.* **2013**, 19, 9481-9484.

[8] Yang, C.; Xue, X. S.; Jin, J. L.; Li, X. & Cheng, J. P. **Theoretical study on the acidities of chiral phosphoric acids in dimethyl sulfoxide: Hints for organocatalysis.** *J. Org. Chem.* **2013**, 78, 7076-7085.

[9] Xi, Z. G.; Zhu, L. H.; Luo, S. Z. & Cheng, J. P. **Catalytic Nazarovreaction of aryl vinyl ketones via binary acid strategy.** *J. Org. Chem.* **2013**, 78, 606-613.

[10] Li, X.; Yang, C.; Jin, J. L.; Xue, X. S. & Cheng, J. P. **Synthesis of optically enriched spirocyclic benzofuran-2-ones by bifunctional thiourea-base catalyzed double-Michael addition of benzofuran-2-ones to dienones.** *Chem. Asian J.* **2013**, 8, 997-1003.

[11] Deng, H.; Li, X.; Chu, Y.; He, J. & Cheng, J. P. **Standard pK_a scales of carbon-centered indicator acids in ionic liquids: Effect of media and structural implication.** *J. Org. Chem.* **2012**, 77, 7291-7298.

[12] Zhou, P.; Zhang, L.; Luo, S. Z. & Cheng, J. P. Asymmetric synthesis of Wieland-Miescher and Hajos-Parrish ketones catalyzed by an amino acid derived chiral primary amine. *J. Org. Chem.* **2012**, 77, 2526-2530.

[13] Li, X.; Liu, C.; Xue, X. S. & Cheng, J. P. **Enantioselective organocatalyzed sulfenylation of 3-substituted oxindoles.** *Org.Lett.* **2012**, 14, 4374-4377.

[14] Lv, J.; Zhang, L.; Zhou, Y.; Nie, Z.; Luo, S. Z. & Cheng, J. P. **Asymmetric binary acid catalysis: A regioselectivity switch between enantioselective 1,2- and 1,4-addition through different counter anions of In^{III}.** *Angew. Chem. Int. Ed*. **2011**, 50, 6610-6614.

[15] Fu, N. K.; Zhang, L.; Li, J. Y.; Luo, S. Z. &Cheng, J. P. **Chiral primary amine catalyzed enantioselective protonation via an enamine intermediate.** *Angew. Chem. Int. Ed.* **2011**, 50, 11451-11455.

[16] Liu, C.; Tan, B.-X.; Zhang, Y.-Y.; Jin, J.-L.; Dong, N.; Li, X. & Cheng, J.P. **Chiral biscinchonaalkaloid promoted asymmetric allylicalkylation of 3-substituted benzofuran-2(3H)-ones with Morita–Baylis–Hillman carbonates.** *J. Org. Chem.* **2011**, 76, 5838-5845.

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[18] Li, X.; Deng, H.; Zhang, B.; Li, J. Y.; Zhang, L.; Luo, S. Z. & Cheng, J. P. **Physical organic study of structure–activity–enantioselectivity relationships in asymmetric bifunctional thiourea catalysis: Hints for the design of new organocatalysts.** *Chem. Eur. J.* **2010**, 16, 450-455.

[19] Luo, S. Z.; Zhou, P.; Li, J. & Cheng, J. P. **Asymmetric retro and transfer aldol reactions catalyzed by a simple chiral primary amine.** *Chem. Eur. J.* **2010**, 16, 4457-4461.

[20] Li, X.; Hu, S. S; Xi, Z.; Zhang,L.; Luo, S. Z. & Cheng, J. P. **Chiral amine thiourea-promoted enantioselective Michael addition reactions of 3-substituted benzofuran-2(3H)-ones to maleimides.** *J. Org. Chem.* **2010**, 75, 8697-8700.

[21] Zhu, X. Q.; Zhang, M. T.; Yu, A.; Wang, C. H.; & Cheng, J. P. **Hydride, hydrogen atom, proton, and electron transfer driving forces of various five-membered heterocyclic organic hydrides and their reaction intermediates in acetonitrile.** *J. Am. Chem. Soc.* **2008**, 130, 2501-2516

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[25] Luo, S. Z.; Mi, X. L.; Zhang, L.; Liu, S.; Xu, H. & Cheng J. P. **Functionalized chiral ionic liquids as highly efficient asymmetric organocatalysts for Michael addition to nitroolefins.** *Angew. Chem. Int. Ed*. **2006,** 45, 3093-3097.

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