

Kuo-Wei Huang

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EDUCATION:

2000-2004 Ph.D. Stanford University
1993-1997 B.S. National Taiwan University

APPOINTMENTS:

06.2022-present Associate Vice President, Research, KAUST
01.2023-present Scientific director/advisor, ISCE², A*STAR
07.2018-present Professor of Chemistry, KAUST
07.2018-04.2021 Director, Chemical Sciences Program, KAUST
07.2014-06.2018 Associate Professor of Chemical Science, KAUST
10.2009-06.2014 Assistant Professor of Chemical Science, KAUST
10.2007-09.2009 Assistant Professor, Department of Chemistry, National University of Singapore
10.2004-09.2007 Goldhaber Distinguished Fellow, Brookhaven National Laboratory
09.1999-07.2000 Full-Time Teaching Assistant, Department of Chemistry, National Taiwan University
01.1998-08.1999 Second Lieutenant, Taiwan Military Police Command

HONORS, AWARDS, & RECOGNITIONS:

2020 Pioneers and Influencers in Organometallic Chemistry, *Organometallics*
(<https://doi.org/10.1021/acs.organomet.0c00056>)
2018 Weiming Innovation Lectureship, Peking University
2017 Appreciation of distinguished teaching contribution, Ministry of Education, KSA
2016 Rising Star, International Symposium for Young Chinese Chemists 2016
2015 New Talents: Asia-Pacific, *Dalton Transactions*
2014 Rising Stars Lectureship, 41st International Conference on Coordination Chemistry
2013-2016 SABIC Presidential Chair Professorship (KAUST)
2013 Asian Rising Stars Lectureship, the 15th Asian Chemical Congress
2012 Danish Chemical Society Lectureship (Denmark)
2012 RIKEN Visiting Fellowship (RIKEN, Japan)
2012 Asian Core Program Lectureship (Singapore)
2011, 2014 Award of Appreciation from King Abdulaziz and his Companions Foundation for Giftedness and Creativity (MAWHIBA) and Ministry of Education, KSA

2010	KAUST 1 st and 2 nd Seed Fund Program Awards (KAUST)
2008	UK-Singapore Partners In Science Collaboration Development Award
2004-2007	Gertrude and Maurice Goldhaber Distinguished Fellowship (BNL/DOE)
2002-2004	Regina Casper Stanford Graduate Fellowship (Stanford University)
1993-1997	Yuan T. Lee Fellowship in Chemistry (CTCI Foundation)
1993-1997	Tuition Scholarship (Ministry of Education, Taiwan)
1995, 1997	President's Awards (National Taiwan University)
07.1993	Silver Medal, 25 th International Chemistry Olympiad (Perugia, Italy)

RESEARCH INTERESTS:

1. Hydrogen production and storage (power to formic acid to power)
2. PN³(P) pincer ligand platform for metal-ligand cooperation and aromaticity in catalysis.
3. Small molecules activation and functionalization (including CO₂ utilization and N₂ reduction)
4. Computational modeling and kinetic studies on organometallic and organocatalysis.

ACADEMIC AND SCIENTIFIC SERVICES:

Associate Editor, *Journal of Saudi Chemical Society* (2022 Impact factor: 4.712).

Member, Promotion and Appointment Committee, KAUST (2019-2021)

Elected Member, Academic Council, KAUST (2012-14)

Chair, Imaging and Characterization Core Lab User Committee, KAUST (2012-15)

Chair, Asian Rising Stars Lectureship Selection Committee, ACC-18, 2019

Organizing Committee, the 15th Asian Chemical Congress (ACC-15), 2013

Organizing Committee, the 41st International Conference on Coordination Chemistry (ICCC-41), 2014

Organizing Committee, 3rd International Conference on Molecular & Functional Catalysis (ICMFC-3), 2017

International Organizing Committee, the 18th Asian Chemical Congress (ACC-18), 2019

International Steering Committee, the 44th International Conference on Coordination Chemistry, 2022

International Scientific Committee, the 19th Asian Chemical Congress (ACC-19), 2023

SELECTED PATENTS AND APPLICATIONS (20+ granted and 6 licensed):

1. **US Patent** No. 8,598,351 (**2013**); Title: Phospho-Amino Pincer-Type Ligands and Catalytic Metal Complexes Thereof.
2. **US Patent** No. 8,692,000 (**2014**); **EPO Patent** No. 2,632,917 (**2016**); **CN Patent** No. 103,209,978 (**2016**); Title: A Novel Phase Transfer Catalyst.
3. **US Patent** No. 9,963,411 (**2018**); Title: "Utilization and Recycling of Emitted Carbon Dioxide"
4. **US Patent** No. 10,300,469 (**2019**); **CN Patent** No. 106,413,891 (**2019**); **EPO Patent** No. 3,077,109 (**2020**); Title: "Metal-Ligand Cooperative Catalysis through NH arm deprotection/pyridine dearomatization for efficient hydrogen generation from formic acid"
5. **US Patent** Nos. 10,399,072 (**2019**) and 11,498,059 (**2022**); Title: "Novel Imines With Tunable Nucleophilicity and Steric Properties Through Metal Coordination: Applications as Ligands and Metalloorganocatalysts"
6. **US Patent** No. 10,500,559 (**2019**), Title: "System and Method For Dehydrogenative Coupling"
7. **EPO Patent** No. 3,391,447 (**2019**); Title: "Electricity Generation Devices Using Formic Acid"
8. **US Patent** No. 10,577,324 (**2020**), Title: "Small Molecule N-(Alpha-Peroxy) Carbazole Compounds"

and Methods of Uses”

9. **US Patent** No. 10,689,341 (**2020**), Title: “Small Molecule N-(Alpha-Peroxy) Indole Compounds and Methods of Uses”
10. **EPO Patent** No. 3,590,754 (**2021**); Title: “Electricity Generation Devices Using Formic Acid”
11. **US Patent** No. 10,913,694 (**2021**), Title: “Methods for Forming Ethylbenzene from Polystyrene.”
12. **US Patent** No. 10,926,249 (**2021**); Title: “Imines With Tunable Nucleophilicity and Steric Properties Through Metal Coordination: Applications as Ligands and Metalloorganocatalysts”
13. **US Patent** No. 11,014,079 (**2021**); **CN Patent** No. 109,843,897 (**2021**); Title: “Hydrogen generation from Formic Acid Catalyzed by a metal complex under Amine-free and aqueous conditions”
14. **US Patent** No. 11,097,243 (**2021**), Title: “System and Method For Dehydrogenative Coupling”
15. **US Patent** No. 11,258,085 (**2022**); Title: “Electricity Generation Devices Using Formic Acid”
16. **US Patent** No. 11,498,059 (**2022**); Title: “Catalysts That Include Iron, Cobalt, and Copper, and Methods for Making the Same”
17. **US Patent** No. 11,565,942 (**2023**); Title: “Modified zeolites that include platinum-containing organometallic moieties and methods for making such”
18. **US Patent** No. 11,591,229 (**2023**); Title: “Modified zeolites that include titanium-containing organometallic moieties and methods for making such”
19. **US Patent** No. 11,591,230 (**2023**); Title: “Modified zeolites that include hafnium-containing organometallic moieties and methods for making such”
20. **US Patent** No. 11,596,931 (**2023**); Title: “Zeolites with tetra-coordinated Lewis aluminum sites and methods for their preparation”
21. US Provisional Patent Application No. 62/599,960, Title: “Efficient CO₂ Hydrogenation to Straight Chain Olefins Over Simple And Robust Alkali Promoted Fe Catalysts”
22. International Patent Application No. PCT/IB2014/000597 (2013), Title: Membranes Including Nanotubes, Methods Of Making Membranes And Methods Of Desalination And Separation.
23. US Provisional Patent Application No. 62/727,664, Title: “Reusable catalysts for non-oxidative dehydrogenation of methanol to methyl formate at high formation rates”
24. US Provisional Patent Application No. 62/711,863, Title: “Methods for Catalytically Converting Petroleum Hydrocarbons.”
25. US Provisional Patent Application No. 62/854,760, Title: “Heterogenized Ru amine or imine catalysts for hydrogen generation from formic acid.”
26. US Provisional Patent Application No. 62/599,960, Title: “Catalysts for CO₂ hydrogenation.”
27. US Provisional Patent Application No. 17/015,653, Title: “Zeolites with tetra-coordinated Lewis aluminum sites and methods for their preparation.”
28. US Provisional Patent Application No. 62/744,351, Title: “Copper-based Catalysts.”
29. US Provisional Patent Application No. 63/251,340, Title: “System and Process for Enriching Lithium from Seawater.”
30. US Provisional Patent Application No. 62/994,906, Title: “Catalysts for selective oxidation of methanol to dimethoxymethane and related methods.”

PUBLICATIONS:

01. Huang, K.-W.; Waymouth, R. M. "Coordination Chemistry of Stable Radicals: Homolysis of a Titanium-Oxygen Bond." *J. Am. Chem. Soc.* **2002**, *124*, 8200-8201.
02. Mahanthappa, M. K.; Huang, K.-W.; Cole, A. P.; Waymouth, R. M. "Synthesis and molecular structure of titanium complexes containing a reduced TEMPO radical." *Chem. Commun.* **2002**, 502-503.
03. Huang, K.-W.; Waymouth, R. M. "Hydrolysis of CpTiCl₂(TEMPO) and Its Application on One-pot Syntheses of CpTiCl(OR)₂ Complexes." *Dalton Trans.* **2004**, 354-356.
04. Huang, K.-W.; Han, J. H.; Cole, A. P.; Musgrave, C. B.; Waymouth, R. M. "Homolysis of Weak Ti-O Bonds: Experimental and Theoretical Studies of Titanium Oxygen Bonds Derived from Stable Nitroxyl Radicals" *J. Am. Chem. Soc.* **2005**, *127*, 3807-3816.
05. Zhang, J.; Grills, D. C.; Huang, K.-W.; Fujita, E.; Bullock, R. M. "Carbon-to-Metal Hydrogen Atom Transfer: Direct Observation Using Time-Resolved Infrared Spectroscopy" *J. Am. Chem. Soc.*

- 2005**, 127, 15684-15685, Editors' Choice in *Science* **2005**, 310, 748 (4th Nov 2005).
06. Zhang, J.; Huang, K.-W.; Szalda, D. J.; Bullock, R. M. "Efficient Synthesis of Os-Os Dimers: $[\text{Cp}(\text{CO})_2\text{Os}]_2$, $[\text{Cp}^*(\text{CO})_2\text{Os}]_2$, and $[(\text{Pr}_4\text{C}_5\text{H})(\text{CO})_2\text{Os}]_2$, and Computational Studies on the Relative Stabilities of Their Geometrical Isomers" *Organometallics* **2006**, 25, 2209-2215.
 07. DeBeer-George, S.; Huang, K.-W.; Waymouth, R. M.; Solomon, E. I. "Metal and Ligand K-edge XAS of Titanium-TEMPO Complexes: Determination of Oxidation States and Insights into Ti-O Bond Homolysis" *Inorg. Chem.* **2006**, 45, 4468-4477.
 08. Grills, D. C.; Huang, K.-W.; Muckerman, J. T.; Fujita, E. "Kinetic Studies of the Photoinduced Formation of Transition Metal-Dinitrogen Complexes Using Time-Resolved Infrared and UV-vis Spectroscopy" *Coord. Chem. Rev.* **2006**, 250, 1681-1695.
 09. Huang, K.-W.; Han, J. H.; Musgrave, C. B.; Waymouth, R. M. "Density Functional Calculations on Ti-TEMPO complexes 2: Influence of Ancillary Ligation on the Strength of the Ti-O bond" *Organometallics* **2006**, 25, 3317-3323.
 10. Kraft, B. M.; Huang, K.-W.; Cole, A. P.; Waymouth, R. M. "Synthesis, Structure, and Polymerization Activity of a Titanium Complex with a Chelating [(Hydroxy- κO)- amino- κN]phenolato(2-)- κO Ligand" *Helv. Chim. Acta* **2006**, 89, 1589-1595.
 11. Huang, K.-W.; Han, J. H.; Musgrave, C. B.; Fujita, E. "Carbon Dioxide Reduction by Pincer Rhodium η^2 -Dihydrogen Complexes: Hydrogen Binding Modes and Mechanistic Studies by Density Functional Theory Calculations" *Organometallics* **2007**, 26, 508-513.
 12. Huang, K.-W.; Grills, D. C.; Han, J. H.; Szalda, D. J.; Fujita, E. "Selective Decarbonylation of Formyl Compounds by a Pincer Rh(I) Complex" *Inorg. Chim. Acta* **2008**, 361, 3327-3331.
 13. Lee, R.; Lim, X.; Chen, T.; Tan, G. K.; Tan, C.-H.; Huang, K.-W. "Crystal Structures of Bicyclic Guanidinium Chloride: Implication of the Bifunctionality of Guanidines" *Tet. Lett.* **2009**, 50, 1560-1562.
 14. Jiang, Z.; Pan, Y.; Zhao, Y.; Ma, T.; Lee, R.; Yang, Y.; Huang, K.-W.; Wong, M. W.; Tan, C.-H. "Enantioselective and Diastereoselective Guanidine-Catalyzed Addition of Fluorocarbon Nucleophiles" *Angew. Chem. Int. Ed.* **2009**, 48, 3627-3631.
 15. Zhang, J.; Krause, J. A.; Huang, K.-W.; Guan, H. "Ancillary Ligand and Ketone Substituent Effects on the Rate of Ketone Insertion into Zr-C Bonds of Zirconocene-1-aza-1,3-diene Complexes" *Organometallics* **2009**, 28, 2938-2946.
 16. Liu, H.; Leow, D.; Huang, K.-W.; Tan, C.-H. "Enantioselective Synthesis of Chiral Allenolate by Guanidine-Catalyzed Isomerization of 3-Alkynoates" *J. Am. Chem. Soc.* **2009**, 131, 7212-7213.
 17. Lin, S.; Leow, J.; Huang, K.-W.; Tan, C.-H. "Enantioselective Protonation of Itaconimides with Thiols and the Rotational Kinetics of the Axially Chiral C-N Bond" *Chem. Asian J.* **2009**, 4, 1741-1744.
 18. Han, X.; Kwiatkowski, J.; Xue, F.; Huang, K.-W.; Lu, Y. "Asymmetric Mannich Reaction of Fluorinated Ketoesters Mediated by a Tryptophan-Derived Bifunctional Thiourea Catalyst: Creation of Chiral Fluorine-Containing Quaternary Centers" *Angew. Chem. Int. Ed.* **2009**, 48, 7604-7607.
 19. Jang, C.; Zhang, K.; Chi, C.; Huang, K.-W.; Wu, J. "Bis-N-annulated Quaterylenebis(dicarboximide)s As A New Soluble And Stable NIR Dye" *Org. Lett.* **2009**, 11, 4508-4511.
 20. Luo, J.; Qu, H.; Yin, J.; Zhang, X.; Huang, K.-W.; Chi, C. " π -Conjugated Oligothiophene-anthracene Cooligomers: Synthesis, Physical Properties, and Self-assembly" *J. Mater. Chem.* **2009**, 19, 8201-8211.
 21. Zhang, K.; Huang, K.-W.; Li, J.; Luo, J.; Chi, C.; Wu, J. "A Soluble and Stable Quinoidal Bisanthene With NIR Absorption And Amphoteric Redox Behavior" *Org. Lett.* **2009**, 11, 4854-4857.
 22. Lee, R.; Yang, Y.; Tan, C.-H.; Huang, K.-W. "A Novel Heteroleptic Paddlewheel Diruthenium Bicyclic Guanidinate Complex: Synthesis, Structure, and Scope" *Dalton Trans.* **2010**, 39, 723-725.
 23. Li, J.; Zhang, K.; Zhang, X.; Huang, K.-W.; Chi, C.; Wu, J. "Meso-substituted Bisanthenes as New Soluble and Stable Near-infrared Dyes" *J. Org. Chem.* **2010**, 75, 856-863.
 24. Li, S.; Kee, C. W.; Huang, K.-W.; Hor, A. T. S.; Zhao, J. "Cyclopentadienyl Molybdenum(II/VI) N-Heterocyclic Carbene Complexes: Synthesis, Structure, and Reactivity under Oxidative Conditions" *Organometallics* **2010**, 29, 1924-1933.
 25. Jothibas, R.; Huang, K.-W.; Huynh, H. V. "Synthesis of cis- and trans-Diisothiocyanato-Bis(NHC)

- Complexes of Ni(II) and Applications in the Kumada-Corriu Reaction" *Organometallics* **2010**, *29*, 3746-3752.
26. Jiao, C.; Huang, K.-W.; Guan, Z.; Xu, Q.-H.; Wu, J. "N-Annulated Perylene Fused Porphyrins with Enhanced Near-IR Absorption and Emission" *Org. Lett.* **2010**, *12*, 4046-4049.
 27. Sun, Z.; Huang, K.-W.; Wu, J. "Soluble and Stable Zethrenebis(dicarboximide) and Its Quinone" *Org. Lett.* **2010**, *12*, 4690-4693.
 28. Hou, D.-R.; Kuan, T.-C.; Li, Y.-K.; Lee, R.; Huang, K.-W. "A Mechanistic Study of the Ruthenium-Catalyzed [3+2]-Cycloaddition" *Tetrahedron* **2010**, *66*, 9415-9420.
 29. Luo, J.; Huang, K.-W.; Qu, H.; Zhang, X.; Zhu, L.; Chan, H. S. O.; Chi, C. "H-shaped oligothiophenes with low band gaps and amphoteric redox properties" *Org. Lett.* **2010**, *12*, 5660-5663.
 30. Wang, F.; Zhang, W.; Zhu, J.; Li, H.; Huang, K.-W.; Hu, J. "Chloride Ion-Catalyzed Generation of Difluorocarbene for efficient preparation of gem-difluorinated cyclopropenes and cyclopropanes" *Chem. Commun.* **2011**, *47*, 2411-2413.
 31. Jiao, C.; Huang, K.-W.; Chi, C.; Wu, J. "Doubly and triply linked porphyrin-perylene monoimides as near IR dyes with large dipole moments and high photostability" *J. Org. Chem.* **2011**, *76*, 661-664.
 32. Luo, L.; Wang, H.; Han, X.; Xu, L.-W.; Kwiatkowski, J.; Huang, K.-W.; Lu, Y. "The Direct Asymmetric Vinylogous Aldol Reaction of Furanones with α -Ketoesters: Access to Chiral γ -Butenolides and Glycerol Derivatives" *Angew. Chem. Int. Ed.* **2011**, *50*, 1861-1864.
 33. Jiao, C.; Huang, K.-W.; Wu, J. "Perylene-Fused BODIPY Dye with Near-IR Absorption/Emission and High Photostability" *Org. Lett.* **2011**, *13*, 632-635.
 34. Zhong, F.; Wang, Y.; Han, X.; Huang, K.-W.; Lu, Y. "L-Threonine-Derived Novel Bifunctional Phosphine-Sulfonamide Catalyst-Promoted Enantioselective Aza-Morita-Baylis-Hillman Reaction" *Org. Lett.* **2011**, *13*, 1310-1313.
 35. Ma, T.; Fu, X.; Kee, C. W.; Zong, L.; Pan, Y.; Huang, K.-W.; Tan, C.-H. "Pentaniidium Catalyzed Enantioselective Phase Transfer Conjugate Addition Reactions" *J. Am. Chem. Soc.* **2011**, *133*, 2828-2831.
 36. Zhang, Y.; Kee, C. W.; Lee, R.; Fu, X.; Soh, J. Y.-T.; Loh, E. M. F.; Huang, K.-W.; Tan, C.-H. "Guanidine-catalyzed enantioselective desymmetrization of meso-aziridines" *Chem. Commun.* **2011**, *47*, 2897-3899.
 37. Liu, C.; Zhu, Q.; Huang, K.-W.; Lu, Y. "Primary Amine/CSA Ion Pair: A Powerful Catalytic System for the Asymmetric Enamine Catalysis" *Org. Lett.* **2011**, *13*, 2638-2641.
 38. Weng, Z.; Lee, R.; Jia, W.; Yuan, Y.; Wang, W. Xue, F.; Huang, K.-W. "Cooperative Effect of Silver in Copper-Catalyzed Trifluoromethylation of Aryl Iodides Using Me_3SiCF_3 " *Organometallics* **2011**, *30*, 3229-3232.
 39. Yang, Y.; Wei, X.; Pan, Y.; Lee, R.; Zhu, B.; Liu, H.; Yan, L.; Huang, K.-W.; Jiang, Z.; Tan, C.-H. "Highly Enantio- and Diastereoselective Synthesis of β -Methyl- γ -Monofluoromethyl Substituted Alcohols" *Chem. Eur. J.* **2011**, *4*, 8066-8070.
 40. Jiao, C.; Zu, N.; Huang, K.-W.; Wang, P.; Wu, J. "Perylene Anhydride Fused Porphyrins as Near-Infrared Sensitizers for Dye-Sensitized Solar Cells" *Org. Lett.* **2011**, *13*, 3652-3655.
 41. Zhu, B.; Yan, L.; Pan, Y.; Lee, R.; Liu, H.; Han, Z.; Huang, K.-W.; Tan, C.-H.; Jiang, Z. "Lewis Base-Catalyzed Highly Enantioselective Allylic Hydroxylation of Morita-Baylis-Hillman Carbonates with Water" *J. Org. Chem.* **2011**, *76*, 6894-6900.
 42. Sun, Z.; Huang, K.-W.; Wu, J. "Soluble and Stable Heptazethrenebis(dicarboximide) with a Singlet Open-Shell Ground State" *J. Am. Chem. Soc.* **2011**, *133*, 11896-11899.
 43. Ranjit, S.; Lee, R.; Heryadi, D.; Shen, C.; Zhang, P.; Huang, K.-W.; Liu, X. "Copper-Mediated C-H Activation/C-S Cross-Coupling of Heterocycles with Thiols" *J. Org. Chem.* **2011**, *76*, 8999-9007.
 44. Ye, Q.; Chang, J.; Huang, K.-W.; Chi, C. "Thiophene-Fused Tetracene Diimide with Low Band Gap and Ambipolar Behavior" *Org. Lett.* **2011**, *13*, 5960-5963.
 45. Zeng, L.; Jiao, C.; Huang, X.; Huang, K.-W.; Chin, W.-S.; Wu, J. "Anthracene-fused BODIPYs as Near Infrared Dyes with High Photostability" *Org. Lett.* **2011**, *13*, 6026-6029.
 46. Li, J.; Jiao, C.; Huang, K.-W.; Wu, J. "Lateral extension of π -conjugation along the bay regions of bisanthrene via Diels-Alder cycloaddition reaction" *Chem. Eur. J.* **2011**, *17*, 14672-14680.

47. He, L.-P.; Chen, T.; Xue, D.; Eddaoudi, M.; Huang, K.-W. "Efficient Transfer Hydrogenation Reaction Catalyzed by A Dearomatized PN³P Ruthenium Pincer Complex Under Base-Free Conditions" *J. Organomet. Chem.* **2012**, *700*, 202-206.
48. Weng, Z.; Li, H.; He, W.; Yao, L.-F.; Tan, J.; Yuan, Y.; Huang, K.-W. "Mild Copper-Catalyzed Trifluoromethylation of Terminal Alkynes Using an Electrophilic Trifluoromethylating Reagent" *Tetrahedron* **2012**, *68*, 2527-2531.
49. Yang, W.; Tan, D.; Lee, R.; Li, L.; Pan, Y.; Huang, K.-W., Tan, C.-H.; Jiang, Z. "Catalytic Diastereoselective Tandem Conjugate Addition-Elimination Reaction of Morita-Baylis-Hillman C-Adducts via C-C Bond Cleavage" *Chem. Asian J.* **2012**, *7*, 771-777.
50. Dasgupta, S.; Huang, K.-W.; Wu, J. "Trifluoromethyl Acting as Stopper in [2]Rotaxane" *Chem. Commun.* **2012**, *48*, 4821-4823.
51. Zhao, Y.; Lim, X.; Pan, Y.; Zong, L.; Feng, W.; Tan, C.-H.; Huang, K.-W. "Asymmetric H/D exchange reactions of fluorinated aromatic ketones" *Chem. Commun.* **2012**, *48*, 5479-5481.
52. Chen, T.; Yang, L.; Li, L.; Huang, K.-W. "Homocoupling of benzyl halides catalyzed by POCOP nickel pincer complexes" *Tetrahedron* **2012**, *68*, 6152-6157.
53. Shen, C.; Xia, H.; Yan, H.; Chen, X.; Ranjit, S.; Xie, X.; Tan, D.; Lee, R.; Yang, Y.; Xing, B.; Huang, K.-W.; Zhnag, P.; Liu, X. "A concise, efficient synthesis of sugar-based benzothiazoles through chemoselective intramolecular C-S coupling" *Chem. Sci.* **2012**, *3*, 2388-2393.
54. Ye, Q.; Chang, J.; Huang, K.-W.; Dai, G.; Zhang, J.; Chen, Z.-K.; Wu, J.; Chi, C. "Incorporating TCNQ into Thiophene-Fused Heptacene for n-Channel Field Effect Transistor" *Org. Lett.* **2012**, *14*, 2786-2789.
55. Chang, J.; Ye, Q.; Huang, K.-W.; Zhang, J.; Chen, Z.-K.; Wu, J.; Chi, C. "Stepwise Cyanation of Naphthalene Diimide for n-Channel Field-Effect Transistors" *Org. Lett.* **2012**, *14*, 2964-2967.
56. Chen, T.; He, L.; Gong, D.; Yang, L.; Maio, X.; Eppinger, J.; Huang, K.-W. "Ruthenium(II) pincer complexes with oxazoline arms for efficient transfer hydrogenation reactions" *Tetrahedron Lett.* **2012**, *53*, 4409-4412.
57. Yang, W.; Tan, D.; Li, L.; Han, Z.; Yan, L.; Huang, K.-W.; Tan, C.-H.; Jiang, Z. "Direct asymmetric allylic alkenylation of N-itaconimides with Morita-Baylis-Hillman carbonates" *J. Org. Chem.* **2012**, *77*, 6600-6607.
58. Yao, L.-F.; Tan, D.; Mao, X.; Huang, K.-W. "A Route to Hydroxylfluorenes: TsOH-Mediated Condensation Reactions of 1,3-diketones with Propargylic Alcohols" *RSC Adv.* **2012**, *2*, 7594-7598.
59. Zeng, W.; Lee, B. S.; Sung, Y. M.; Huang, K.-W.; Li, Y.; Kim, D.; Wu, J. "Tetrakis(4-tert-butylphenyl) Substituted and Fused Quinoidal Porphyrins" *Chem. Commun.* **2012**, *48*, 7684-7686.
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61. Zeng, Z.; Sung, Y. M.; Bao, N.; Tan, D.; Lee, R.; Zafra, J. L.; Lee, B. S.; Ishida, M.; Ding, J.; Navarrete, J. T. L.; Li, Y.; Zeng, W.; Kim, D.; Huang, K.-W.; Webster, R. D.; Casado, J.; Wu, J. "Stable Tetrabenzo- Chichibabin's Hydrocarbons: Tunable Ground State and Unusual Transition between Their Closed-shell and Open-shell Resonance Form" *J. Am. Chem. Soc.* **2012**, *134*, 14513-14525.
62. Li, Y.; Heng, W.-K.; Lee, B. S.; Aratani, .; Zafra, J.; Bao, N.; Lee, R.; Sung, Y. M.; Sun, Z.; Huang, K.-W.; Webster, R.; Navarrete, J. T.; Kim, D.; Osuka, A.; Cordon, .; Ding, J.; Wu, J. "Kinetically Blocked Stable Heptazethrene and Octazethrene: Closed-Shell or Open-Shell in the Ground State?" *J. Am. Chem. Soc.* **2012**, *134*, 14913-14922.
63. Zhang, W.; Tan, D.; Lee, R.; Tong, G.; Chen, W.; Qi, B.; Huang, K.-W.; Tan, C.-H.; Jiang, Z. "Highly Enantio- and Diastereoselective Reactions of γ -Substituted Butenolides Through Direct Vinylogous Conjugate Additions" *Angew. Chem. Int. Ed.* **2012**, *51*, 10069-10073.
64. Huang, Y.; Fang, X.; Lin, X.; Li, H.; He, W.; Huang, K.-W.; Yuan, Y.; Weng, Z. "Room-Temperature Base-Free Copper-Catalyzed Trifluoromethylation of Organotrifluoroborates to Trifluoromethylarenes" *Tetrahedron* **2012**, *68*, 9949-9953.
65. Zheng, H.; Huang, Y.; Wang, Z.; Li, H.; Huang, K.-W.; Yuan, Y.; Weng, Z. "Synthesis of trifluoromethylated acetylenes via copper-catalyzed trifluoromethylation of alkynyltrifluoroborates" *Tetrahedron Lett.* **2012**, *53*, 6646-6649.
66. Zeng, G.; Chen, T.; He, L.-P.; Pinnau, I.; Lai, Z.-P.; Huang, K.-W. "A green approach to ethyl acetate:

- Quantitative conversion of ethanol through direct dehydrogenation in a Pd-Ag membrane reactor” *Chem. Eur. J.* **2012**, *18*, 15940-15943.
67. Ni, Y.; Zeng, W.; Huang, K.-W.; Wu, J. “Benzene-fused BODIPYs: synthesis and the impact of fusion mode” *Chem. Commun.* **2013**, *49*, 1211-1219.
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Book Chapters:

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Work Submitted:

305. Parsapur, R. K.; Hengne, A. M.; Koseoglu, O. R.; Hodgkins, R. P.; Bendjeriou-Sedjerari, A.; Lai, Z.; Huang, K.-W. "Methodical restructuring of microporous FAU-type zeolites into hierarchically ordered porous frameworks" in revision.
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Dehydrogenation of Neat Formic Acid" submitted.

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310. Feng, C.; Bo, T.; Maity, P.; Zuo, S.; Zhou, W.; Huang, K.-W.; Mohammed, O. F.; Zhang, H. "Regulating Photocatalytic CO₂ Reduction Kinetics through Modification of Surface Coordination Sphere" submitted.

INVITED CONFERENCE LECTURES* AND SEMINARS:

01. 08.2023* International Symposium for Chinese Organic Chemists (ISCOC-13), Beijing, China
02. 08.2023 Institute of Computational Chemistry, Beijing University of Chemical Technology
03. 08.2023 College of New Energy and Materials, China University of Petroleum (Beijing)
04. 08.2023 Institute of Advanced Energy Technology, Hefei University of Technology
05. 08.2023* "Advances in Photo- and Electrochemical Reduction of CO₂: Symposium Honoring Etsuko Fujita" ACS Fall Meeting 2023, San Francisco, USA
06. 08.2023* "Catalysis goes to eleven", ACS Fall Meeting 2023, San Francisco, USA
07. 07.2023* 19th Asian Chemical Congress, Istanbul, Turkey
08. 07.2023 College of Chemistry & Materials Engineering, Wenzhou University, China
09. 07.2023 College of Environmental & Resource Sciences, Zhejiang University, China
10. 07.2023* 2nd International Symposium on Advanced Functional Materials, Hangzhou, China
11. 04.2023 Soochow University, Suzhou, China
12. 04.2023 College of Science, Westlake University, Hangzhou, China
13. 04.2023 Hangzhou Normal University, China
14. 04.2023 East China Normal University, China
15. 04.2023 School of Chemistry & Chemical Engineering, Shanghai Jiao Tong University, China
16. 04.2023 University of Chinese Academy of Sciences, Beijing, China
17. 04.2023 Shanghai Research Institute of Chemical Industry, Shanghai, China
18. 04.2023 School of Chemistry and Chemical Engineering, North Minzu University, China
19. 04.2023 Department of Chemistry, Fudan University, China
20. 04.2023 Shanghai Institute of Organic Chemistry, China
21. 03.2023 School of CCEB, Nanyang Technological University, Singapore
22. 03.2023* 2023 Chemistry National Meeting, Kaohsiung, Taiwan
23. 03.2023 Research Center for Applied Sciences, Academia Sinica, Taiwan
24. 02.2023 Department of Chemical and Biological Engineering, HKUST

25. 02.2023 Department of Mechanical Engineering, University of Hong Kong
26. 12.2022* The 4th International Symposium of Ionic Coordination Compounds, Osaka, Japan
27. 11.2022* The 3rd International Conference for Industry-Academy Joint Research, Korea
28. 11.2022 Pirelli, Milan, Italy
29. 11.2022* 1st Gulf Chemistry Association International Conference and Exhibition
30. 11.2022 Graduate School of Engineering, Kyoto University, Japan
31. 11.2022 Department of Chemical System Engineering, University of Tokyo, JapanS
32. 11.2022* Center of Hydrogen Innovation, National University of Singapore
33. 09.2022 A*STAR Infectious Diseases Labs (ID Labs), Singapore
34. 09.2022 China-ASEAN College of Marine Sciences, Xiamen University Malaysia
35. 09.2022* 2nd International Conference on Materials for Humanity (MH 22)
36. 09.2022* 2022 A*STAR Sustainability Mini Symposium
37. 09.2022* IMRE 25th Anniversary Scientific Conference
38. 08.2022* 44th International Conference on Coordination Chemistry
39. 08.2022* 8th Asian Conference on Coordination Chemistry
40. 08.2022 Institute of Chemistry, Academia Sinica, Taipei, Taiwan
41. 08.2022 Department of Chemistry, National Taiwan University, Taipei, Taiwan
42. 06.2022 Precourt Institute for Energy, Stanford University, USA
43. 06.2022 Department of Chemistry, University of California, San Diego, USA
44. 04.2022 School of Materials Science and Engineering, NTU, Singapore
45. 03.2022 Department of Chemistry, University of California, Irvine, USA
46. 03.2022* A*STAR-SMBC Joint Webinar
47. 02.2022 Taiwan Theoretical and Computational Molecular Sciences Association
48. 02.2022 Department of Mechanical Engineering, University of Hong Kong
49. 02.2022 Department of Chemistry, National University of Singapore
50. 01.2022* e-ASIA JRP Alternative Energy Workshop
51. 12.2021* 2021 MRS Fall Meeting
52. 11.2021* A*STAR 30th Anniversary Scientific Conference 2021
53. 11.2021* Plenary Lecture, HYPOTHESIS XVI Online 2021
54. 10.2021 University of Pennsylvania student webinar
55. 06.2021 3D Printed F1 Concept Car IES Project Meeting, Saudi Aramco
56. 05.2021 Saudi Arabian International Chemical Science Chapter of ACS
57. 01.2021 Tackling the CO₂ Challenge workshop, National University of Singapore

58. 11.2020 King Fahd University of Petroleum and Minerals, Saudi Arabia
59. 11.2020 KAUST-Chimie ParisTech Virtual Workshop
60. 09.2020 Tata Institute of Fundamental Research, Mumbai, India
61. 05.2020 Institute of Materials Research and Engineering, Singapore
62. 03.2020 Chemical Science Program, KAUST, Saudi Arabia
63. 03.2020 Department of Materials Science and Engineering, CUHK, HKSAR, China
64. 02.2020* KAUST Research Conference: Transition to Low Carbon Mobility, Saudi Arabia
65. 12.2019* 1st International Conference on Energy, Environment and sustainability (ICNEES)
66. 12.2019 Indian Association for the Cultivation of Science, Kolkata, India
67. 12.2019 Department of Chemistry, St. Xavier's College, Kolkata, India
68. 12.2019* 18th Asian Chemical Congress, Taipei, Taiwan
69. 11.2019 College of Chemistry and Chemical Engineering, Southwest University, China
70. 11.2019 School of Chemistry and Chemical Engineering, Chongqing University, China
71. 11.2019 Department of Chemistry, Graduate School of Science, Kyoto University, Japan
72. 10.2019* The 2nd International Conference for Industry-Academy Joint Research, Korea
73. 10.2019 King Fahd University of Petroleum and Minerals, Saudi Arabia
74. 10.2019* 1st China-Singapore Collaborative Synthetic Chemistry Symposium, China
75. 09.2019 California NanoSystems Institute, UCLA, Los Angeles, California, USA
76. 08.2019 Department of Chemistry, National Taiwan University, Taipei, Taiwan
77. 08.2019 College of Chemistry and Molecular Engineering, Peking University, Beijing, China
78. 06.2019 School of Chemistry & Chemical Engineering, Shanghai Jiao Tong University, China
79. 06.2019 Department of Chemistry, Fudan University, China
80. 06.2019 Shanghai Institute of Organic Chemistry, China
81. 05.2019 Department of Chemistry, University of Houston, USA
82. 05.2019 College of Science, National Taiwan Normal University, Taiwan
83. 05.2019 Department of Chemistry, Southern University of Science and Technology, China
84. 03.2019 Vidyasirimedhi Institute of Science and Technology, Thailand
85. 03.2019 Division of Chemistry and Biological Chemistry, NTU, Singapore
86. 01.2019 Department of Chemistry, National University of Singapore, Singapore
87. 12.2018* 10th Singapore International Chemistry Conference (SICC10), Singapore
88. 12.2018* GCC Pavilion Events, UN Climate Change Conference-COP24, Katowice, Poland
89. 11.2018 College of Environmental & Resource Sciences, Zhejiang University, China
90. 11.2018* 18th Tateshina Conference on Organic Chemistry, Japan

91. 11.2018 Advanced Science Institute, RIKEN, Wako-shi, Japan
92. 10.2018 Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan
93. 10.2018 Department of Chemistry, National Chung Hsing University, Taichung, Taiwan
94. 10.2018 Department of Chemistry, University of Pennsylvania, USA
95. 08.2018 Dept. of Medicinal and Applied Chemistry, Kaohsiung Medical Univ., Taiwan
96. 08.2018* The 43rd International Conference on Coordination Chemistry, Sendai, Japan
97. 07.2018 Chemicals R&D Division, Research and Development Centre, Saudi Aramco
98. 05.2018 Center of Basic Molecular Science, Tsinghua University, Beijing, China
99. 05.2018 Shanghai Institute of Organic Chemistry, Shanghai, China
100. 05.2018 Department of Chemistry, Peking University, Beijing, China
101. 04.2018 Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan
102. 01.2018* KAUST Research Conference: New Challenges in Heterogeneous Catalysis
103. 01.2018 Department of Chemistry, Boston College, USA
104. 01.2018 Department of Chemistry, University of Pennsylvania, USA
105. 01.2018 School of Pharmacy, University of Wisconsin–Madison, USA
106. 12.2017* 10th National Conference on Organic Chemistry, Shenzhen, China
107. 12.2017* S.-T. Yau Science Forum, Tsinghua University, Beijing, China
108. 11.2017 National Institute of Advanced Industrial Science and Technology, Miyagi, Japan
109. 11.2017 Department of Chemistry, Tohoku University, Miyagi, Japan
110. 10.2017 EPFL-KAUST Symposium, LPI-ISIC, EPFL, Switzerland
111. 10.2017 LSCI-ISIC, École Polytechnique Fédérale de Lausanne, Switzerland
112. 10.2017* 12th National Conference on Physical Organic Chemistry, Wuhan, China
113. 05.2017 Department of Chemistry, National Taiwan University, Taipei, Taiwan
114. 05.2017 Institute of Chemistry, Academia Sinica, Taipei, Taiwan
115. 05.2017 Lanzhou Institute of Chemical Physics in Suzhou, Suzhou, China
116. 03.2017 Department of Chemistry, The Chinese University of Hong Kong, Hong Kong
117. 03.2017 Department of Chemistry, The University of Hong Kong, Hong Kong
118. 02.2017* 3rd International Conference on Molecular and Functional Catalysis (ICMFC-3)
119. 01.2017* 2017 International Workshop for collaboration in Hydrogen Energy
120. 12.2016* The 10th World Bioenergy Symposium (WBS 2016), Dongguan, China
121. 12.2016* The 14th International Symposium for Chinese Organic Chemists, Singapore
122. 12.2016 School of Chemistry, South China University of Technology, Guangzhou, China
123. 11.2016* International Symposium in Catalysis and Fine Chemicals 2016, Taipei, Taiwan

124. 11.2016* 6th International Kyoto Symposium on Organic Nanostructures, Kyoto, Japan
125. 11.2016 Graduate School of Engineering, Kyoto University, Japan
126. 10.2016* 3rd Innovation for Cool Earth Forum (ICEF2016), Tokyo, Japan
127. 08.2016* 2nd International conference on Advances in Functional Materials, Jeju Island, Korea
128. 07.2016* 20th International Symposium on Homogeneous Catalysis (ISHCXX), Kyoto, Japan
129. 05.2016* International Symposium for Young Chinese Chemists 2016, Shanghai, China
130. 04.2016* KAUST-NTU-AS Workshop for Enhancing Collaborations on Research and Education in Chemical and Materials Sciences and Engineering, KAUST, Saudi Arabia
131. 03.2016 Department of Chemistry and Biochemistry, University of Notre Dame, USA
132. 03.2016 Department of Chemistry, Ohio State University, Columbus, Ohio, USA
133. 02.2016* KAUST Research Conferences: Artificial Photosynthesis
134. 01.2016 KAUST Winter Enrichment Program 2016
135. 12.2015 College of Chemistry, Chemical Engineering and Material Science, Soochow University, Suzhou, China
136. 12.2015 Department of Chemistry, Fudan University, Shanghai, China
137. 12.2015 College of Chemistry and Molecular Engineering, Peking University, Beijing, China
138. 12.2015 John van Geuns Lecture, Van't Hoff Institute for Molecular Sciences, University of Amsterdam, The Netherlands
139. 11.2015 Department of Chemistry, Trinity University, San Antonio, Texas, USA
140. 11.2015* 5th International Kyoto Symposium on Organic Nanostructures, Kyoto, Japan
141. 10.2015 National Chemical Laboratory, Pune, India
142. 10.2015 Department of Chemistry, Indian Institute of Technology Bombay, Mumbai, India
143. 08.2015* Golden Jubilee Chemistry Conference, Singapore
144. 06.2015 Institute of Chemistry, Academia Sinica, Taipei, Taiwan
145. 06.2015 Department of Chemistry, National Sun Yat Sen University, Kaohsiung, Taiwan
146. 06.2015 Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan
147. 05.2015 The Institute of Materials Research and Engineering, Singapore
148. 05.2015 SABIC Corporate Research and Innovation (CRI) Center at KAUST
149. 04.2015* 4th Grubbs Symposium, Ningbo University, Ningbo, China
150. 02.2015* KAUST Research Conferences: Catalytic Carbon and hydrogen Management
151. 12.2014* 8th Singapore International Chemistry Conference, Singapore
152. 12.2014 Xiamen University, Xiamen, China
153. 11.2014* 4th International Kyoto Symposium on Organic Nanostructures, Kyoto, Japan

154. 10.2014 The University of Texas at Austin, Austin, TX, USA
155. 10.2014* The 2014 ECS and SMEQ Joint International Meeting, Cancun, Mexico
156. 07.2014 Nanyang Technological University, Singapore
157. 07.2014* The 41st International Conference on Coordination Chemistry
158. 06.2014 College of Chemistry and Molecular Engineering, Peking University, Beijing, China
159. 06.2014 Department of Chemistry, National Taiwan University, Taipei, Taiwan
160. 04.2014* 3rd Grubbs Symposium, Ningbo University, Ningbo, China
161. 04.2014 Shanghai Institute of Organic Chemistry, Shanghai, China
162. 03.2014 Department of Chemistry, Rice University, Houston, TX, USA
163. 03.2014 SABIC Technology Center, Sugar Land, TX, USA
164. 12.2013 National Center for Nanoscience and Technology, Beijing, China
165. 12.2013 College of Chemistry and Chemical Engineering, Shihezi University, China
166. 12.2013* 2013 International Symposium on Catalysis and Fine Chemicals (C&FC2013)
167. 10.2013* The Sixth Asia-Pacific Congress on Catalysis (APCAT-6)
168. 10.2013 Department of Chemistry, University of Houston, Houston, TX, USA
169. 09.2013 Institute of Coal Chemistry, CAS, Taiyuan, China
170. 09.2013 University of Chinese Academy of Science, Beijing, China
171. 08.2013* 15th Asian Chemical Congress, Singapore
172. 07.2013 Department of Chemistry, University of Texas, San Antonio, Texas, USA
173. 05.2013 College of Chemistry, Huainan Normal University, Huainan, China
174. 05.2013 College of Materials Science, Anhui University of Science and Technology, China
175. 05.2013* 2nd Grubbs Symposium, Ningbo University, Ningbo, China
176. 04.2013* 3rd KICP Symposium: "Filling up the Innovation Pipeline through Academic R&D Collaborations", KAUST, Thuwal, Saudi Arabia
177. 03.2013 Department of Chemistry, National University of Singapore, Singapore
178. 11.2012* 2nd International Kyoto Symposium on Organic Nanostructures, Kyoto, Japan
179. 11.2012* 4th RSC Dalton Transactions International Symposium, Singapore
180. 10.2012 Department of Chemistry, Aarhus University, Aarhus, Denmark
181. 10.2012 Department of Chemistry, University of Copenhagen, Copenhagen, Denmark
182. 07.2012* 2nd International Conference on Molecular & Functional Catalysis, Singapore
183. 07.2012 Department of Chemistry, Nagoya University, Nagoya, Japan
184. 07.2012 Advanced Science Institute, RIKEN, Wako-shi, Japan
185. 03.2012 College of Chemistry, Chemical Engineering and Material Science, Soochow

- University, Suzhou, China
186. 02.2012* 5th International Catalysis mini-symposium, Wuhan, China
187. 01.2012 Institute of Chemistry, Academia Sinica, Taipei, Taiwan
188. 01.2012 Department of Chemistry, National Taiwan University, Taipei, Taiwan
189. 01.2012 Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan
190. 01.2012 Department of Chemistry, National Sun Yat Sen University, Kaohsiung, Taiwan
191. 01.2012 Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan
192. 01.2012 Department of Applied Chemistry, National Chiao Tung University, Hsinchu, Taiwan
193. 01.2012 Department of Chemistry, National Chung Hsing University, Taichung, Taiwan
194. 11.2011* 1st ICE/KCC Symposium on Catalysis, KAUST, Thuwal, Saudi Arabia
195. 11.2011* International Conference on Green & Sustainable Chemistry 2011, Singapore
196. 11.2011* 1st International Kyoto Symposium on Organic Nanostructures, Kyoto, Japan
197. 11.2011 Guangzhou Institute of Energy Conversion, Guangzhou, China
198. 11.2011 Sun Yat-Sen University, Guangzhou, China
199. 09.2011* 14th Asian Chemical Congress, Bangkok, Thailand
200. 08.2011 Shanghai Institute of Organic Chemistry, Shanghai, China
201. 03.2011 Department of Chemistry, King Saud University, Riyadh, Saudi Arabia
202. 12.2010* KCC Symposium on Catalysis, KAUST, Thuwal, Saudi Arabia
203. 11.2010* KICP Seminar Series: Beyond Wind and Solar. The Future of Fossil & Renewable Power Generation in KSA: New Technologies, Deployment Models, Enabling Policies, KAUST, Thuwal, Saudi Arabia
204. 11.2010* First International Collaborative and Cooperative Chemistry Symposium in Frontiers in Molecular Design & Synthesis, Singapore
205. 11.2010* 5th Asian Symposium of Advanced Organic Synthesis, Kyoto University, Japan
206. 07.2010* International Conference on Molecular & Functional Catalysis, Singapore
207. 09.2009 Department of Chemistry, National Taiwan University, Taipei, Taiwan
208. 09.2009 Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan
209. 09.2009 Department of Chemistry, National Central University, Chung-Li, Taiwan
210. 09.2009 Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan
211. 09.2009 Department of Chemistry, National Sun Yat Sen University, Kaohsiung, Taiwan
212. 07.2009 Department of Chemistry, Peking University, Beijing, China
213. 07.2009 School of Chemical Biology and Biotechnology, Peking University Shenzhen Graduate School, Shenzhen, China
214. 07.2009 Department of Chemistry, East China University of Science and Technology, China

215. 07.2009 Shanghai Institute of Organic Chemistry, Shanghai, China
216. 02.2009 Department of Chemistry, University of Hyderabad, Hyderabad, India
217. 02.2009 Department of Chemistry, Indian Institute of Technology at Bombay, Mumbai, India
218. 02.2009 Laboratoire de Chimie Organométallique de Surface, CPE-Lyon, France
219. 12.2008 Department of Chemistry, University of Queensland, Queensland, Australia
220. 11.2008 Department of Chemistry, Wuhan University, Wuhan, China
221. 11.2008* 4th Asian Symposium of Advanced Organic Synthesis, Kyoto University, Japan
222. 11.2008 Mitsui Chemicals, Chiba, Japan
223. 10.2008 Singapore National Institute of Chemistry, Singapore
224. 09.2008 School of Chemistry, University of Nottingham, Nottingham, United Kingdom
225. 09.2008 Department of Chemistry, University of Warwick, Coventry, United Kingdom
226. 08.2008 Department of Chemistry, Tamkang University, Tamsui, Taiwan
227. 07.2008* The 9th International Symposium for Chinese Organic Chemists (ISCOC), China
228. 11.2007* 3rd Asian Symposium of Advanced Organic Synthesis, Kyoto University, Japan