



Kelvin H.-C. Chen 陳皇州

Professor, Department of Applied Chemistry



886-8-7663800 Ext. 33254



kelvin@mail.nptu.edu.tw



Room 203, Science Building I, Pingshih Campus



Protein Science Laboratory

Research Field

Protein Structure and Function
Bioinorganic Chemistry

Education

Ph.D., Chemistry, National Tsing Hua University,
Taiwan

Publications

1.1 Journal Papers

- 1.1.1 Vladimir Mironov, Irina A Shchugoreva, Polina V Artyushenko, Dmitry Morozov, Nicola Borbone, Giorgia Oliviero, Tatiana N Zamay, Roman V Moryachkov, Olga S Kolovskaya, Kirill A Lukyanenko, Yangling Song, Iuliia A Merkuleva, Vladimir N Zabluda, Georgy Peters, Lyudmila S Koroleva, Dmitry V Veprintsev, Yury E Glazyrin, Ekaterina A Volosnikova, Svetlana V Belenkaya, Tatiana I Esina, Anastasiya A Isaeva, Valentina S Nesmeyanova, Daniil V Shanshin, Anna N Berlina, Nadezhda S Komova, Valery A Svetlichnyi, Vladimir N Silnikov, Dmitriy N Shcherbakov, Galina S Zamay, Sergey S Zamay, Tatyana Smolyarova, Elena P Tikhonova, Kelvin H-C Chen, U-Ser Jeng, Gerolama Condorelli, Vittorio de Franciscis, Gerrit Groenhof, Chaoyong Yang, Alexander A Moskovsky, Dmitri G Fedorov, Felix N Tomilin, Weihong Tan, Yuri Alexeev, Maxim V Berezovski, Anna S Kichkailo. Structure and Interaction Based Design of Anti-SARS-CoV-2 Aptamers. *Chemistry-A European Journal*. (2022) doi: 10.1002/chem.202104481.
- 1.1.2 Gilbert Audira, Jiann-Shing Lee, Petrus Siregar, Nemi Malhotra, Marri Jmelou M. Rolden, Jong-Chin Huang, Kelvin H.-C. Chen, Hua-Shu Hsu, Yuchun Hsu, Tzong-Rong Ger and Chung-Der Hsiao*. Comparison of the Chronic Toxicities of Graphene and Graphene Oxide Toward Adult Zebrafish by Using Biochemical and Phenomic Approaches. (2021) *Environmental Pollution*, 278, 116907 (SCI; Impact Factor:6.792, Co-author).
- 1.1.3 Sunney I. Chan* Phimonphan Chuankhayan, Pavan Kumar Reddy Nareddy, I-Kuen Tsai, Yi-Fang Tsai, Kelvin H.-C. Chen, Steve S.-F. Yu* and Chun-Jung Chen*. Mechanism of Pyrroloquinoline Quinone-Dependent Hydride Transfer Chemistry from Spectroscopic and High-Resolution X-ray Structural Studies of the Methanol Dehydrogenase from *Methylococcus capsulatus* (Bath). (2021) *J. Am. Chem. Soc.*, 143, 9, 3359-3372. <https://doi.org/10.1021/jacs.0c11414>. (SCI; Impact Factor: 14.612, Co-author).

- 1.1.4 Chung-Der Hsiao, Hsin-Hui Wu, Nemi Malhotra, Yen-Ching Liu, Ying-Hsuan Wu, Yu-Nung Lin, Ferry Saputra, Fiorency Santoso and Kelvin H.-C. Chen*. Expression and Purification of Recombinant GHK Tripeptides Are Able to Protect against Acute Cardiotoxicity from Exposure to Waterborne-Copper in Zebrafish. (2020) *Biomolecules*, 10, 1202, 1-17. doi:10.3390/biom10091202 (SCI; Impact Factor: 4.879, Corresponding author).
- 1.1.5 Nemi Malhotra, Tzong-Rong Ger, Boontida Uapipatanakul, Jong-Chin Huang, Kelvin H.-C. Chen*, and Chung-Der Hsiao*. Review of Copper and Copper Nanoparticle Toxicity to Fish. (2020) *Nanomaterials*, 10, 1126, 1-28. (SCI; Impact Factor: 5.076, Co-corresponding author).
- 1.1.6 Tsun-Ren Chen*, Yi-Sheng Lin, Yu-Xiang Wang, Wen-Jen Lee, Kelvin H.-C. Chen and Jhy-Der Chen. Graphene oxide–iridium nanocatalyst for the transformation of benzylic alcohols into carbonyl compounds (2020) *RSC Advances*, 10, 4436-4450. (SCI; Impact Factor: 3.049)
- 1.1.7 Tsun-Ren Chen*, Yu-Xiang Wang, Wen-Jen Lee, Kelvin H.-C. Chen and Jhy-Der Chen. A reduced graphene oxide-supported iridium nanocatalyst for selective transformation of alcohols into carbonyl compounds via a green process. (2020) *Nanotechnology*, 31, 285705-285715. (SCI; Impact Factor: 3.399)
- 1.1.8 Kelvin H.-C. Chen*, Hui-Chuan Wei, Ai-Tzu Li, Wei-Ni Wang and Yu-Hsien Liao. The Supreme core on Multicriteria Fuzzy Games. (2020) *Journal of Intelligent & Fuzzy Systems*, 38, 2, 1753-1760. (SCI; Impact Factor: 1.637, Corresponding and first author)
- 1.1.9 Yu-Jhang Lu, Mu-Cheng Hung, Brian T.-A. Chang, Tsu-Lin Lee, Zhi-Han Lin, I-Kuen Tsai, Yao-Sheng Chen, Chin-Shuo Chang, Yi-Fang Tsai, Kelvin H.-C. Chen, Sunney I. Chan, Steve S.-F. Yu*. The PmoB subunit of particulate methane monooxygenase (pMMO) in *Methylococcus capsulatus* (Bath): The CuI sponge and its function (2019) *J. Inorg. Biochem.*, 196, Article 110691. (SCI; Impact Factor: 3.224)
- 1.1.10 Kenneth Y.-T. Lim, Kelvin H.-C. Chen, Sheau-Wen Lin, Jong-Chin Huang, Kristal S.-E., Ng, Joel J.-L. Ng, Yifei Wang, Nicholas Woong. Representations of Novice Conceptions with Learner-Generated Augmentation: A Framework for Curriculum Design with Augmented Reality. (2018) *Journal of Virtual World Research* 11, 3, Pedagogy (Part 1).
- 1.1.11 Tsun-Ren Chen*, Pei-Chun Liu, Hsiu-Pen Lee, Fang-Siou Wu, Kelvin H.-C. Chen. Cyclometalated Iridium (III) complexes with ligand effect on catalytic carbon hydrogen bond activation of toluene in high performance. (2017) *Euro. J. Inorg. Chem.* 13, 2023-2031. (SCI; Impact Factor: 2.686)
- 1.1.12 Yi-Ting Chen, Kelvin H.-C. Chen, Mituhiro Fukuda*. DFT study for evaluation of the interaction of coordinated molecule to Fe(III) in various iron(III) chloride complexes. (2016) *J. Comp. Chem., Japan*.
- 1.1.13 Tsun-Ren Chen*, Fang-Siou Wu, Hsiu-Pen Lee, Kelvin H.-C. Chen. Diiridium bimetallic complexes function as a redox switch to directly split carbonate into carbon monoxide and oxygen. (2016) *J. Am. Chem. Soc.*, 138, 3643-3646. (SCI; Impact Factor: 12.113)

- 1.1.14 Kelvin H.-C. Chen*, Phimonphan Chuankhayan, Hsin-Hui Wu, Chun-Jung Chen*, Mitsuhiro Fukuda, Steve S.-F. Yu, Sunney I. Chan. The bacteriohemerythrin from *Methylococcus capsulatus* (Bath): Crystal structures reveal that Leu114 regulates a water tunnel. (2015) *J. Inorg. Biochem.*, 150, 81-89. (SCI; Impact Factor: 3.444, Co-corresponding and co-first author)
- 1.1.15 Kelvin H.-C. Chen*, Hsin-Hui Wu, Si-Fu Ke, Ya-Ting Rao, Chia-Ming Tu, Yu-Ping Chen, Kuo-Hsuan Kuei, Ying-Siao Chen, Vincent C.-C. Wang, Wei-Chun Kao, Sunney I. Chan. Bacteriohemerythrin bolsters the activity of the particulate methane monooxygenase (pMMO) in *Methylococcus capsulatus* (Bath). (2012) *J. Inorg. Biochem.*, 111, 10-17. (SCI; Impact Factor: 3.317, Corresponding and first author, Times Cited = 11).
- 1.1.16 Sunney I. Chan*, Hiep Hoa T. Nguyen, Kelvin H.-C. Chen and Steve S.-F. Yu. Over-expression and purification of the Particulate Methane Monooxygenase (pMMO) from *Methylococcus capsulatus* (Bath). (2011) *Methods in Enzymology*, 495, 177-193. (SCI, Impact Factor: 2.002, Times Cited = 5)
- 1.1.17 Tsun-Ren Chen*, Hsiu-Pen Lee, Jhy-Der Chen, Kelvin H.-C. Chen (2010) An 18+d iridium dimer releasing metalloradicals spontaneously. *Dalton Trans.*, 39, 9458-9461. (SCI, Impact Factor: 4.081, Times Cited = 3)
- 1.1.18 Hsiu-Pen Lee, Yi-Fen Hsu, Tsun-Ren Chen*, Jhy-Der Chen, Kelvin H.-C. Chen, Ju-Chun Wang. (2009) A Novel Cyclometalated Dimeric Iridium Complex, [(dfpbo)(2) Ir](2) [dfpbo = 2-(3,5-Difluorophenyl)]. *Inorg. Chem.*, 48, 4, 1263-1265. (SCI, Impact Factor: 4.657, Times Cited = 11)
- 1.1.19 Kelvin H.-C. Chen*, Sunney I. Chan. (2007) The Structure Biology Studies of Metallic Membrane Protein: Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath), National Synchrotron Radiation Research Center User's Research Report, II-121.
- 1.1.20 Steve S.-F. Yu, Cheng-Zhi Ji, Ya-Ping Wu, Tsu-Lin Lee, Chien-Hung Lai, Su-Ching Lin, Zong-Lin Yang, Vincent C.-C. Wang, Kelvin H.-C. Chen, Sunney I. Chan*. (2007) The C-Terminal Aqueous-Exposed Domain of the 45 kDa Subunit of the Particulate Methane Monooxygenase (pMMO) in *Methylococcus capsulatus* (Bath) is a Cu(I) Sponge. *Biochemistry*, 46, 13762-13774. (SCI, Impact Factor: 3.015, Times Cited = 16)
- 1.1.21 Sunney I. Chan*, Vincent C.-C. Wang, Jeff C.-H. Lai, Steve S.-F. Yu, Peter P.-Y. Chen, Kelvin H.-C. Chen, Chang-Li Chen, Michael K. Chan. (2007) Redox Potentiometric Studies of the Particulate Methane Monooxygenase: Support for a Trinuclear Copper Cluster Active Site. *Angew. Chem. Int. Ed.* 46, 12, 1992-1994. (SCI, Impact Factor: 11.261, Times Cited = 77)
- 1.1.22 Steve S.-F. Yu, Kelvin H.-C. Chen, Cheng-Zhi Ji, Chu-Lin Lee, Chien-Hung Lai, Zong-Lin Yang, Sunney I. Chan. (2006) The XAS Studies of the Copper Ions in the Aqueous-exposed Domains of the 45 kDa Subunit of Particulate Methane Monooxygenase. National Synchrotron Radiation Research Center Activity Report 2006/2007, II, 207.

- 1.1.23 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2005) X-ray Absorption Spectroscopic Studies of pMMO from *Methylococcus capsulatus* (Bath) National Synchrotron Radiation Research Center Activity Report 2004/2005, 65-68.
- 1.1.24 Sunney I. Chan*, Kelvin H.-C. Chen, Steve S.-F. Yu, Chang-Li Chen, Simon S.-J. Kuo. (2004) Toward Delineating the Structure and Function of the Particulate Methane Monooxygenase (pMMO) from Methanotrophic Bacteria. *Biochemistry*, 43, 15, 4421-4430. (SCI, Impact Factor: 3.015, Times Cited = 93)
- 1.1.25 Kelvin H.-C. Chen, Chang-Li Chen, Chiu-Fou Tseng, Steve S.-F. Yu, Shyue Chu Ke, Jyh-Fu Lee, Hiep Hoa T. Nguyen, Sean J. Elliott, James O. Alben, Sunney I. Chan*. (2004) The Copper Clusters in the Particulate Methane Monooxygenase (pMMO) from *Methylococcus capsulatus* (Bath). *J. Chin. Chem. Soc.*, 51, 5B, 1081-1098 Feature Article. (SCI, Times Cited = 37)
- 1.1.26 Madhuri S. Vinchurkar, Kelvin H.-C. Chen, Yu-Heng Tseng, Steve S.-F. Yu, Hui-Chi Chiu, Shu-Hua Chien and Sunney I. Chan*. (2004) Polarized ATR-FTIR Spectroscopy of the Membrane-Embedded Domains of the Particulate Methane Monooxygenase. *Biochemistry*, 43, 42, 13283-13292. (SCI, Impact Factor: 3.015, Times Cited = 15)
- 1.1.27 Chang-Li Chen, Kelvin H.-C. Chen, Shyue Chu Ke, Steve S.-F. Yu, Sunney I. Chan*. (2004) Preparation and characterization of a (Cu,Zn)-pMMO from *Methylococcus capsulatus* (Bath). *J. Inorg. Biochem.*, 98, 12, 2125-2130. (SCI, Impact Factor: 3.444, Times Cited = 7)
- 1.1.28 Joseph W. Arndt, Kelvin H.-C. Chen, Xuejun Zhong, Joseph A. Krzycki, Michael K. Chan*. (2004) Support for Nickel as the Labile Metal in the A-center of the *M. barkeri* Acetyl-CoA Decarbonylase/Synthase Complex. *J. Chin. Chem. Soc.*, 51, 5B, 1253-1258. (SCI)
- 1.1.29 Svitlana V. Pavlova, Kelvin H.-C. Chen, Sunney I. Chan*. (2004) Spectroscopic Characterization of the Oxotransfer Reaction from bis-(μ -oxo) Dicopper (III) Complex to Triphenylphosphine. *Dalton Trans.*, 21, 20, 3261-3272. (SCI, Times Cited = 5)
- 1.1.30 Shao-Ching Hung, Chang-Li Chen, Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan*. (2004) The Trinuclear Copper (II) Clusters of the Particulate Methane Monooxygenase from Methanotrophic Bacteria: Electron Paramagnetic Resonance Spectral Simulations. *J. Chin. Chem. Soc.*, 51, 5B, 1229-1244. (SCI, Times Cited = 24)
- 1.1.31 Steve S.-F. Yu, Kelvin H.-C. Chen, Mandy Y.-H. Tseng, Yane-Shih Wang, Chiu-Feng Tseng, Yu-Ju Chen, Ded-Shih Huang*, Sunney I. Chan*. (2003) Production of High Quality pMMO in High Yields from *Methylococcus capsulatus* (Bath) with a Hollow-Fiber Membrane Bioreactor. *J. Bacteriol.*, 185, 20, 5915-5924. (SCI, Impact Factor: 2.808, Times Cited = 70)
- 1.1.32 Steve S.-F. Yu, Lo-Ying Wu, Kelvin H.-C. Chen, Wen-I Luo, Ded-Shih Huang, and Sunney I. Chan*. (2003) The Stereospecific Hydroxylation of [2-2H₂] butane and Chiral Deuterated Butanes by the Particulate Methane Monooxygenase from in *Methylococcus capsulatus* (Bath). *J. Biol. Chem.*, 278, 42, 40658-40669. (SCI, Impact Factor: 4.573, Times Cited = 35)

1.2 Conference Papers

- 1.2.1 Kelvin H.-C. Chen, Ying-Hsuan Wu, Virecia Williams, Sheau-Wen Lin, Hua-Shu Hsu, Jang-Ho Son, Satoko Ishikawa (2020) The Effects of Green Energy Education on Students' Learning. *Cognitive Cities. IC3 2019. Communications in Computer and Information Science*, vol 1227. Springer, Singapore. https://doi.org/10.1007/978-981-15-6113-9_83.
- 1.2.2 Kelvin H.-C. Chen, Yi-Shang Lee, Xin-Ping Chen, Yi-Kun Tsai, Shu-Wei Tang (2016) The Redox Reaction Mechanism Study of Bacteriohemerythrin in *Methylococcus capsulatus* (Bath) by X-ray Absorption Spectroscopy. National Synchrotron Radiation Research Center (NSRRC) 2016 User's meeting, Hsinchu, Taiwan.
- 1.2.3 Kelvin H.-C. Chen (2015) The bacteriohemerythrin from *Methylococcus capsulatus* (Bath): Crystal structures reveal that Leu114 regulates a water tunnel. National Synchrotron Radiation Research Center (NSRRC) 2015 User's meeting, Hsinchu, Taiwan.
- 1.2.4 Shiu-Chin Huang, Kelvin H.-C. Chen (2015) Gamma-PGA Production by *Bacillus subtilis* in Solid-state Fermentation. The 6th NICE conference, Tokyo, Japan.
- 1.2.5 Kelvin H.-C. Chen (2014) Introduction of the Hands-on Science Learning Center at NPTU. The 3rd Taiwan-Korea-Japan DHP Conference. Hyogo, Japan.
- 1.2.6 Yen-Chi Chen, Kelvin H.-C. Chen (2013) Human progesterone receptor membrane protein binding characteristics of the component I studied biochemistry. The 5th NICE conference, Pingtung, Taiwan.
- 1.2.7 Kelvin H.-C. Chen, Ya-Hsuan Jao (2013) Environment *Acinetobacter baumannii* resistance organisms with bamboo charcoal bear body phase analysis. The 5th NICE conference, Pingtung, Taiwan.
- 1.2.8 Kelvin H.-C. Chen, Hsin-Hui Wu, Si-Fu Ke, Ya-Ting Rao, Chia-Ming Tu, Yu-Ping Chen, Kuo-Hsuan Kuei, Ying-Siao Chen, Vincent C.-C. Wang, Wei-Chun Kao, Sunney I. Chan (2012) Bacteriohemerythrin, the helping hands of the particulate methane monooxygenase (pMMO) in *Methylococcus capsulatus* (Bath). National Synchrotron Radiation Research Center (NSRRC) 2012 User's meeting, Hsinchu, Taiwan.
- 1.2.9 Kelvin H.-C. Chen, Szu-Han Chou, Hsin-Hui Wu, Yu-Ping Chen, Ya-Wen Liu, Chih-Yu Hsieh, Si-Fu Ke (2010) Expression, Purification and Biochemical Characterization of Human Progesterone Receptor Membrane Component 1 (PGRMC1). 5th Asian Biological Inorganic Chemistry Conference (AsBIC-IV), Kaohsiung, Taiwan.
- 1.2.10 Shin-Hui Wu, Su-Ching Lin, Sunney I. Chan, Rita P.-Y. Chen, and Kelvin H.-C. Chen (2009) Spectroscopic and Biochemical Characterization of Human Membrane associated Progesterone Receptor Component 1 (PGRMC1_human). Seventeenth Symposium on Recent Advances in Cellular and Molecular Biology, Kenting, Pingtung, Taiwan.
- 1.2.11 Shin-Huey Wu, Yu-Ping Chen, Wei-Chung Kao, Vincent C.-C. Wang, Steve S.-F. Yu, Sunney I. Chan and Kelvin H.-C. Chen. (2008) The X-ray crystallographic Studies of Methanol

- Dehydrogenase from *Methylococcus capsulatus* (Bath). National Synchrotron Radiation Research Center (NSRRC) 2008 User's meeting, Hsinchu, Taiwan.
- 1.2.12 Steve S.-F. Yu, Kelvin H.-C. Chen, Madhuri S. Vinchurkar, Sunney I. Chan. (2006) The PmoB C-Terminal Domain of pMMO in *Methylococcus capsulatus* (Bath) is a Cu(I) Sponge. Gordon Research Conference: Molecular Basis of Microbial One-Carbon Metabolism, Magdalen College, Oxford, UK.
- 1.2.13 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2004) Toward Delineating the Structure and Function of the Particulate Methane Monooxygenase (pMMO) from Methanotrophic Bacteria. 2004 American Society Biochemistry And Molecular Biology Annual Meeting (ASBMB), Boston, Massachusetts, USA.
- 1.2.14 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2003) Characterization of the copper C-cluster of the Particulate Methane Monooxygenase in *Methylococcus capsulatus* (Bath). 1st Asian Biological Inorganic Chemistry Conference (AsBIC-I) Okasaki, Japan.
- 1.2.15 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2003) Purification of the Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath). 11th International Conference on Bioinorganic Chemistry (ICBIC 11) Carins, Australia.
- 1.2.16 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2003) Characterization of the copper C-cluster of the Particulate Methane Monooxygenase in *Methylococcus capsulatus* (Bath). 2003 Keystone Symposia, Membrane proteins: Structure and Mechanism. Taos, New Mexico, USA.
- 1.2.17 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2001) The Characterization of the Copper Cluster of the Particulate Methane Monooxygenase in *Methylococcus capsulatus* (Bath). Synchrotron Radiation Research Center (SRRC) 7th User's meeting, Hsinchu, Taiwan.
- 1.2.18 Kelvin H.-C. Chen, Steve S.-F. Yu, Sunney I. Chan. (2000) Dioxygen activation and alkane hydroxylation by the membrane-bound Methane Monooxygenase in Methanotrophic Bacteria. The Sixth Symposium of the Biophysical Society of Taiwan, Hsinchu, Taiwan.

Academic Projects

2.1 MOST

- 2.1.1 The copper reconstitution and protein-protein interaction studies of recombined PmoB subunit of particulate methane monooxygenase.
- 2.1.2 The study of protein-protein interaction between hemerythrin and particulate methane monooxygenase in *Methylococcus capsulatus* (Bath).

2.2 Academia Sinica

- 2.2.1 Purification, biochemical characterization and co-crystallization of the functional particulate methane monooxygenase (pMMO) and methanol dehydrogenase (MDH) from *Methylococcus capsulatus* (Bath).

Relevant Experience

3.1 Academic Experience

3.2 Teaching Experience

3.3 Others

Updated:2023/04/11