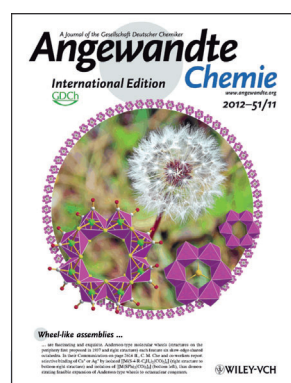




C.-M. Che

The author presented on this page has recently published his **30th article** since 2000 in *Angewandte Chemie*: “Gold(III) Complexes Containing N-Heterocyclic Carbene Ligands: Thiol “Switch-on“ Fluorescent Probes and Anti-Cancer Agents”: T. Zou, C. T. Lum, S. S.-Y. Chui, C.-M. Che, *Angew. Chem.* **2013**, 125, 3002–3005; *Angew. Chem. Int. Ed.* **2013**, 52, 2930–2933.



The work of C.-M. Che has been featured on the back cover of *Angewandte Chemie*: “Molecular Wheels of Ruthenium and Osmium with Bridging Chalcogenolate Ligands: Edge-Shared-Octahedron Structures and Metal-Ion Binding”: S. L.-F. Chan, L. Shek, J.-S. Huang, S. S.-Y. Chui, R. W.-Y. Sun, C.-M. Che, *Angew. Chem.* **2012**, 124, 2668–2671; *Angew. Chem. Int. Ed.* **2012**, 51, 2614–2617.

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| Education: | 1975–1978 BSc, The University of Hong Kong 1978–1982 PhD with Professor Chung-Kwong Poon, The University of Hong Kong 1980–1983 Research Associate with Professor Harry B. Gray, California Institute of Technology |
| Awards: | 1995 Fellow of the Chinese Academy of Sciences; 2000 Distinguished Research Achievement Award of The University of Hong Kong; 2006 State Natural Science Award of China (First Class); TWAS Prize in Chemistry (TWAS: The World Academy of Sciences); 2007 Fellow of TWAS; Seaborg Memorial Lectureship; 2008 Hong Kong Leader of the Year 2007 (Education/Research Category); Julia S. and Edward Clark Lee Lectureship; 2013 RSC Centenary Prize; Foreign Associate of the US National Academy of Sciences |
| Current research interests: | Synthetic chemistry and metal coordination chemistry; metal-catalyzed C–H functionalization, and C–C, C–O, and C–N bond formation; small-molecule activation; phosphorescent metal complexes and long-lived, emissive electronic excited states; photocatalysis; metal-catalyzed organic oxidations; complexes with reactive metal–ligand multiple bonds; light-emitting materials; weak interactions for self-assembly; bioinorganic chemistry and chemical biology of transition-metal complexes |
| Hobbies: | Chinese literature; chemistry research; chatting with friends and students |

My favorite place on earth is ... Hong Kong.

I lose track of time when ... I chat with my friends and students.

My biggest motivation is ... to convince local young scientists and the scientific community of Hong Kong that it is entirely feasible to develop home-grown, world-leading, and innovative research, even when working in a less favorable environment, and I believe that innovative and creative research is a useful means to build self-confidence and a pillar for the sustainable development of a society.

If I could go back in time and do any experiment, it would be ... the synthesis of complexes of earth-abundant metals with reactive metal–ligand multiple bonds in the years 1999–2000.

The downside of my job is ... I have to write a lot of progress reports.

My greatest achievement in research ... hopefully has not yet been reached; the accomplishments of my students constitute my greatest satisfaction and continue to be a driving force for me to expand the scope of my research.

The most amusing chemistry adventure in my career was ... and still is ... long-lived and emissive electronic excited states.

My favorite food is ... all kinds of seafood (cooked).

My favorite motto is ... persistence.

The most significant scientific advance of the last 100 years has been ... the understanding of chemical bonding and weak interactions.

What I look for first in a publication is ... the authors and the abstract.

The most important thing I learned from my parents is ... to take care of my family in difficult times.

I would have liked to have discovered ... practical, robust metal catalysts for activation of dioxygen and dinitrogen.

The best advice I have ever been given is ... to improve my writing.

I chose chemistry as a career because ... I can earn a reasonably good living while doing what I like to do.

My best investment was ... my time in chemistry research.

If I were not a scientist, I would be ... a teacher.

How is chemistry research different now than at the beginning of your career?

Chemistry nowadays is usually interdisciplinary in nature. As a consequence, sophisticated chemical instrumentation is usually needed for performing the research and/or for characterization. At the beginning of my career, I worked on the synthesis of metal coordination complexes, and the tools used were mainly X-ray crystallography, and UV/Vis and NMR spectroscopy. Nowadays, I still work on inorganic and organometallic synthesis, but at the same time make efforts to identify new properties and/or useful applications of the metal complexes prepared. Furthermore, density functional

calculations are increasingly used for understanding the electronic structures of metal complexes and for the study of reaction mechanisms. Synthetic chemistry nowadays is usually linked to the design of new functional molecules with applications in catalysis, medicines, or materials science.

What is the secret to publishing so many high-quality papers?

There is no particular secret. I do the things that I like with persistence and confidence; I listen to other people's criticism and keep acquiring new knowledge with time.

My 5 top papers:

1. "A Practical and Mild Method for the Highly Selective Conversion of Terminal Alkenes into Aldehydes through Epoxidation–Isomerization with Ruthenium(IV)–Porphyrin Catalysts": J. Chen, C.-M. Che, *Angew. Chem.* **2004**, *116*, 5058–5062; *Angew. Chem. Int. Ed.* **2004**, *43*, 4950–4954.
This is a one-step direct conversion of terminal alkenes to aldehydes, without oxidative cleavage of C=C bonds, in high product yields and under mild conditions. Subsequent development led to the replacement of the ruthenium porphyrin with an iron porphyrin catalyst, and the use of air or hydrogen peroxide as terminal oxidant.
2. "The Intrinsic $^3[\text{d}^*\text{p}\sigma]$ Emission of Binuclear Gold(I) Complexes with Two Bridging Diphosphane Ligands Lies in the Near UV; Emissions in the Visible Region Are Due to Exciplexes": W.-F. Fu, K.-C. Chan, V. M. Miskowski, C.-M. Che, *Angew. Chem.* **1999**, *111*, 2953–2955; *Angew. Chem. Int. Ed.* **1999**, *38*, 2783–2785.
Covalent metal–substrate bonding interactions of electronically excited metal complexes is a useful operational principle for developing selective luminescent probes for molecular recognition and new metal photocatalysts used in light-induced inner-sphere C–X functionalization. This paper shows that the metal–metal bonded excited states of coordinatively unsaturated d^{10} metal complexes readily form complexes with substrates, and that exciplex emission significantly contributes to the emissions of luminescent gold(I) complexes in the visible region.
3. "Supramolecular Polymers and Chromonic Mesophases Self-Organized from Phosphorescent Cationic Organoplatinum(II) Complexes in Water": W. Lu, Y. Chen, V. A. L. Roy, S. S.-Y. Chui, C.-M. Che, *Angew. Chem.* **2009**, *121*, 7757–7761; *Angew. Chem. Int. Ed.* **2009**, *48*, 7621–7625.
Planar metal complexes without any surfactant units can self-organize in water into liquid-crystalline supra-

molecular polymers that can be mechanically processed as microfibers or thin films with functionalities. As the optical, charge-transport, and electronic properties of the platinum(II) building block can be modulated by ligand-design studies, this work provides an entry to new classes of functional molecular materials through self-assembly of planar metal complexes in aqueous solutions.

4. "Platinum(II) Complexes with Dipyrrophenazine Ligands as Human Telomerase Inhibitors and Luminescent Probes for G-Quadruplex DNA": D.-L. Ma, C.-M. Che, S.-C. Yan, *J. Am. Chem. Soc.* **2009**, *131*, 1835–1846.
Square-planar platinum(II) complexes can have dual roles, both as emission probes for signaling studies and as intercalators of secondary DNA structures of therapeutic interest. This work greatly expands the horizon of application studies of planar metallointercalators, particularly those containing platinum(II). By judicious choice of auxiliary ligands, it is feasible to develop platinum(II) complexes as selective anticancer agents by noncovalent binding to secondary DNA structures, while the mechanism of anticancer action can be traced by using emission spectroscopy.
5. "Aziridination of Alkenes and Amidation of Alkanes by Bis(tosylimido)ruthenium(VI) Porphyrins. A Mechanistic Study": S.-M. Au, J.-S. Huang, W.-Y. Yu, W.-H. Fung, C.-M. Che, *J. Am. Chem. Soc.* **1999**, *121*, 9120–9132.
Probing the mechanisms of the direct reactions of isolated, well-characterized, reactive metal tosylimido complexes with C–H bonds and C=C bonds provides important insights into metal-catalyzed C–N bond formation via reactive metal imide/nitrene intermediates. This can lead to better design of new metal catalysts for C–H amination and alkene aziridination, both of which are important reactions in organic synthesis.

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