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Editorial

In memoriam Professor Wei Jiang, one of the young editorial board members

It is with great sadness for us that Professor Wei Jiang, a young and well-known supramolecular chemist, passed away on Sunday 25 December 2022. He created a series of supramolecular hosts including Oxatubarenes [1] and Naphthotubes [2] with inner functionalized groups [3–6] and applied them into materials, catalysis, molecular machines and drug recognition and delivery fields [7–10] during his independent research career.

Prof. Wei Jiang graduated from Xi'an Jiaotong University in 2004 with a bachelor degree. In the same year, he was recommended to the research group of Professor Yu Liu of Nankai University and obtained his master degree in physical chemistry in 2007. He was awarded a Ph.D. in 2010 in the Department of Organic Chemistry at the Freie Universität Berlin under the supervision of Professor Christoph A. Schalley and later worked as a research assistant at the same university. At the beginning of 2011, he joined the research group of Professor Julius Rebek Jr. of Scripps Research Institute in California, USA, and engaged in post-doctoral research. At the end of October 2012, he joined the Department of Chemistry, Southern University of Science and Technology and established a research group on supramolecular chemistry and materials.

Prof. Wei Jiang was heavily involved with *Chin. Chem. Lett.* (CCL) since he became the Young Member of Editorial Board in 2017 and then became the vice-director of the Young Editorial Board for Organic Chemistry in the same year. He witnessed the growth of the Journal and supported its many achievements in his role as Editorial Board Member as well as the Author.

Inspired by the molecular recognition pattern, Prof. Wei Jiang and his group worked on biomimetic molecular recognition and dedicated to the application of their biomimetic recognition in sensing [11], catalysis [12], machine [13], assembly [14] and materials [15]. As a scientific journal in chemistry, CCL also had published Jiang's four articles in supramolecular and host-guest chemistry from 2017 to 2022 [16–20], which are briefly introduced as follows.

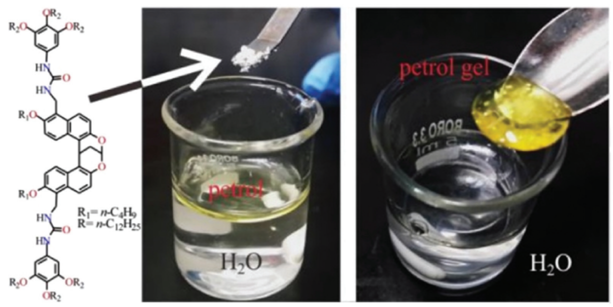

Fig. 1. The structure and application of the organogelator. Copied with permission [16]. Copyright 2017, Chinese Chemical Society.

1. Supramolecular gelation of a curved bis-naphthalene compound

A small molecule with a curved bis-naphthalene core and bis-urea groups was designed and synthesized [16]. The molecules could polymerize to a supramolecular polymer through intermolecular multiple hydrogen bonding between urea groups cooperated with off-centered π-π stacking and C–H$\cdots\pi$ interactions of bis-naphthalene clefts. Due to the n-$C_{12}H_{25}$ groups terminated the urea clefts, some nonpolar solvents such as petroleum ether (PE), toluene (PhMe), xylol, cyclohexane (CH), and methyl cyclohexane (MCH) can be gelated by the supramolecular gelator in 1.0 wt%. The gelation ability can be extended to more oils from n-hexane (n-C_6H_{14}) to n-tetradecane (n-$C_{14}H_{30}$). This supramolecular gelator has the potential to be used in the recovery of a small amount of oil in water (Fig. 1).

2. The selective recognition ability of an *endo*-functionalized molecular tubes

In this work, Jiang and co-workers further explored the selective recognition ability of an *endo*-functionalized molecular tubes to some linear polycyclic aromatic hydrocarbons [17]. 13 aromatic hydrocarbons were selected to bind with four molecular tubes. The NMR results and single crystal X-ray crystallography showed that multiple C/N–H$\cdots\pi$ interactions between the molecular tubes and the aromatic hydrocarbons play the key roles in the binding. In spite of the weak feature of these non-covalent interactions, this work showed again the power of cooperativity of many weak interactions (Fig. 2).

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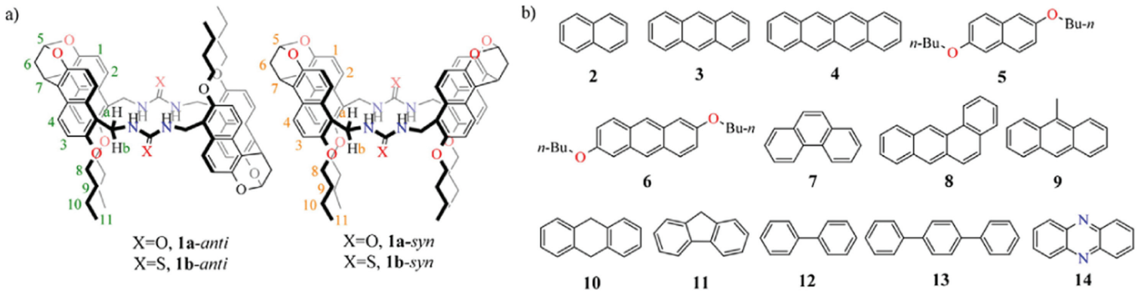

Fig. 2. The structures of molecular tubes (a) and aromatic hydrocarbons (b). Copied with permission [17]. Copyright 2018, Chinese Chemical Society.

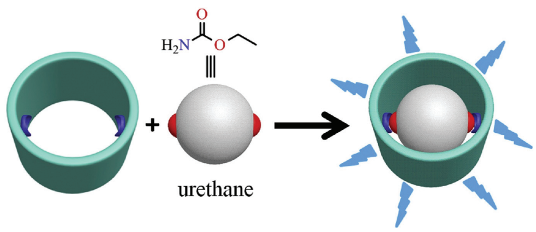

Fig. 3. Recognition and sensing of urethane. Copied with permission [19]. Copyright 2019, Chinese Chemical Society.

3. Recognition and sensing of urethane in water

The recognition of water-soluble molecules in water is a huge challenge in supramolecular chemistry [18,19]. There is also a key problem for sensing these molecules. Urethane is one of these kinds of molecules which are common contaminants in water. Urethane has genotoxic and carcinogenic features to many animals including human beings, and was listed by World Health Organization (WHO) to Group 2A carcinogen. To recognize and sense this dangerous molecule, two water-soluble *endo*-functionalized molecular tubes were applied. The qualitative NMR confirmed the binding abilities of the two molecular tubes with urethane in water. The titration experiments showed the recognition constants up to 10^3 L/mol. The strong recognition resulted in the fluorescence alteration of molecular tubes. With the *syn*-configured molecular tube, the urethane detection with fluorescent change in water and beer could be executed. A wide range of concentrations from 6.2 µmol/L to 60 µmol/L in water or from 22.9 µmol/L to 60 µmol/L in beer could be feasible (Fig. 3).

4. Highly selective binding of an *endo*-functionalized naphthobox

In biology systems, the active pockets of proteins could distinguish many small molecules with highly similar structures and recognize one of them selectively. While in artificial synthetic molecular hosts, to realize this ability is still hard. Jiang and co-workers designed and synthesized an *endo*-functionalized naphthobox [20]. This molecular host could selectively bind methyl viologen. According to the NMR titrations, compared with other 11 pyridinium salts, the host has the highest binding constant (1.7×10^4 L/mol). The selectivity for methyl viologen and ethyl viologen is 59, the highest in the reported literatures (Fig. 4).

Since it was launched in 1990, CCL publishes preliminary accounts in the whole field of chemistry, satisfying a real and urgent need for the dissemination of research results. Especially, CCL has been witnessing the great boom in the field of supramolecular chemistry and related. CCL has been being, to some degree, one of important platform for exhibiting the significant findings from supramolecular chemists in China. As an outstanding young chemist, Professor Wei Jiang provided a great contribution to supramolecular chemistry, and his loss will be felt by many across the academic community. To honor the memory of Prof. Wei Jiang, CCL is planning to organize a themed collection in due course.

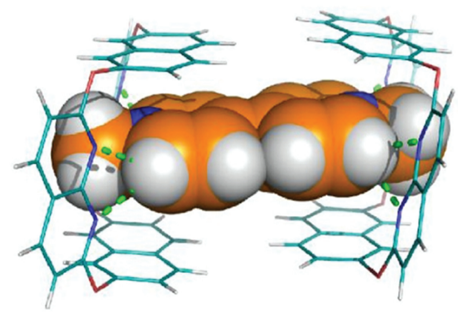

Fig. 4. High selective binding of molecular host to methyl viologen. Copied with permission [20]. Copyright 2022, Chinese Chemical Society.

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References

[1] F. Jia, Z. He, L.P. Yang, et al., Chem. Sci. 6 (2015) 6731–6738.
[2] H. Yao, H. Ke, X. Zhang, et al., J. Am. Chem. Soc. 140 (2018) 13466–13477.
[3] L.P. Yang, X. Wang, H. Yao, W. Jiang, Acc. Chem. Res. 53 (2020) 198–208.
[4] H. Chai, Z. Chen, S.H. Wang, et al., CCS Chem. 2 (2020) 440–452.
[5] Q.C. Huang, M. Quan, H. Yao, L.P. Yang, W. Jiang, Chin. J. Chem. 39 (2021) 1593–1598.
[6] X. Wang, M. Quan, H. Yao, X.Y. Pang, H. Ke, W. Jiang, Nat. Commun. 13 (2022) 2291.
[7] Y.L. Ma, M. Quan, X.L. Lin, et al., CCS Chem. 3 (2021) 1078–1092.
[8] Y.L. Ma, C. Sun, Z. Li, et al., CCS Chem. 4 (2022) 1977–1989.
[9] H. Ke, L.P. Yang, M. Xie, et al., Nat. Chem. 11 (2019) 470–477.
[10] G. Huang, W. Jiang, Prog. Chem. 27 (2015) 744–754.
[11] L.L. Wang, M. Quan, T.L. Yang, Z. Chen, W. Jiang, Angew. Chem. Int. Ed. 59 (2020) 23817–23824.
[12] L.M. Bai, H. Zhou, W.E. Liu, et al., Chem. Commun. 55 (2019) 3128–3131.
[13] L.M. Zhao, L.S. Zheng, X. Wang, W. Jiang, Angew. Chem. Int. Ed. 61 (2022) e202214296.
[14] L.P. Yang, H. Ke, H. Yao, W. Jiang, Angew. Chem. Int. Ed. 60 (2021) 21404–21411.
[15] H. Yao, Y.M. Wang, M. Quan, et al., Angew. Chem. Int. Ed. 59 (2020) 19945–19950.
[16] H. Yao, L.P. Yang, Z.F. He, J.R. Li, W. Jiang, Chin. Chem. Lett. 28 (2017) 782–786.
[17] G.B. Huang, W.E. Liu, A. Valkonen, H. Yao, K. Rissanen, W. Jiang, Chin. Chem. Lett. 29 (2018) 91–94.
[18] L.M. Bai, H. Yao, L.P. Yang, W. Zhang, W. Jiang, Chin. Chem. Lett. 30 (2019) 881–884.
[19] M.S. Li, M. Quan, X.R. Yang, W. Jiang, Sci. China Chem. 65 (2022) 1733–1740.
[20] W. Liu, L. Kong, M. Quan, et al., Chin. Chem. Lett. 33 (2022) 4896–4899.