

Semiconducting Coordination Polymers Based on the Predesigned Ternary Te-Fe-Cu Carbonyl Cluster and Conjugation-Interrupted Dipyriddy Linkers



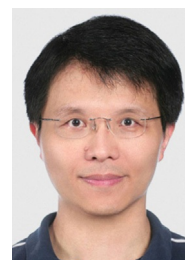
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Invited for the cover of this issue is the group of Minghuey Shieh and Hsiang-Lin Liu at the National Taiwan Normal University. The image depicts the mechanosynthesis of semiconducting coordination polymers and the electron communication facilitated by secondary forces within these frameworks. Read the full text of the article at 10.1002/chem.201701257.

What was the inspiration for this cover design?

This cover was designed by Chia-Chi Yu and inspired by two important festivals in Chinese culture, Moon Festival and Valentine's Day. Once upon a time, there was a pretty lady named Chang'e who accidentally got the elixir and stealthily drank it. As soon as she took it, she flew from her house and finally landed on the moon. Besides, it was said that there was a jade rabbit also living on the moon, who was ordered by the Emperor of Heaven to manufacture the elixir with a mortar. We connected these two legends to our study that the jade rabbit used the Taipei 101 as a pestle to grind the TeFe_3 -based cluster with the ligands to synthesize the cation-anion polymer, the elixir, taken by Chang'e. On the other hand, a beautiful but heart-rending love story said that the seventh daughter of the Emperor of Heaven, the Weaving Maid, fell in love deeply with an orphaned cowherd, but they were forced separated by the Emperor. They were only allowed to meet on the magpie bridge once a year on the seventh day of the seventh lunar month. Our study demonstrated that the electron communication was facilitated by secondary forces (nonclassical $\text{C-H}\cdots\text{O}$ (carbonyl) hydrogen bondings and aromatic $\text{C-H}\cdots\pi$ interactions), the magpie bridge, within these frameworks.

What aspects of this project do you find most exciting?

The selective synthesis of conducting or semiconducting coordination polymers with flexible and non-conjugated ligands has been an interesting and challenging issue. We are excited to find that the TeFe_3 -based carbonyl cluster can serve as an efficient building block to construct the conjugation-interrupted dipyriddy-linked semiconducting polymers with high selectivity, owing to its steric hindrance and electron-donating ability, and most importantly, numerous secondary interactions within the frameworks were demonstrated to facilitate the electron communication.

What other topics are you working on at the moment?

Besides metal carbonyl cluster-incorporated semiconducting polymers, our research also focuses on the synthetic, magnetic, electro-

chemical, optical, and theoretical studies, as well as catalytic applications of heavier main group elements-containing homo/hetero-transition metal carbonyl clusters. We have reviewed such studies previously.



Front Cover Picture:
M. Shieh, H.-L. Liu et al.
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