**Synthesis, Characterization, and Applications of Larger Azaacenes**

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Replacing the CH groups in the backbones of acenes with heteroatoms offers scientists greater opportunities to tune their properties, as the type, position, number, and the valence of the introduced heteroatoms have strong effects on the frontier orbital energy levels. When the heteroatoms are nitrogen atoms, all of the resulting materials are called azaacenes. Recently, the synthesis, structure, physical properties and applications of azaacene derivatives have been intensively investigated. In this talk, I will present our recent progress on the preparation of novel larger azaacenes and their application in FETs and solar cells.

**Key Words**: Large azaacenes, synthesis, Characterization, application

[1] J. Zhang, P. Gu, G. Long, R. Ganguly, Y. Li, N. Aratani, H. Yamada, **Q. Zhang**\* *Chem. Sci.* **2016**,**7**: DOI: 10.1039/C5SC04954G.

[2] J. Zhang, C. Wang, G. Long, N. Aratani, H. Yamada, **Q. Zhang**\*, *Chem. Sci.* **2016**, **7**: 1309 – 1313.

[3] C. Wang, J. Zhang, G. Long, N. Aratani, H. Yamada, Y. Zhao, **Q. Zhang**\*, *Angew. Chem Int. Ed.* **2015**, **54**: 6292–6296

[4] J. Wu, X. Rui, G. Long, W. Chen, Q. Yan\*, **Q. Zhang**\*, *Angew. Chem Int. Ed.* **2015**, 54: 7354-7358.

[5] Z. Wang, J. Miao, G. Long, P. Gu, J. Li, N. Aratani, H. Yamada, B. Liu\*, **Q. Zhang**\* *Chem. Asian J*. **2016**, *11*, 482–485.

[6] C. Wang, P. Gu, B. Hu, **Q. Zhang**\* *J. Mater. Chem. C* **2015**, *3*, 10055 – 10065.

[7] J. Li, J. Miao, G. Long, J. Zhang, Y. Li, R. Ganguly, Y. Zhao, Y. Liu, B. Liu\*, **Q. Zhang**\* *J. Mater. Chem. C*, **2015**, *3*, 9877 – 9884.

[8] J. Li, **Q. Zhang**\* *ACS Applied Materials and Interfaces*, **2015**, *7*, 28049-28062.

[9] J. Li, P. Li, J. Wu, J. Gao, W. Xiong, G. Zhang, Y. Zhao, **Q. Zhang**\*, *J. Org. Chem.* **2014**, *79*, 4438-45.

[10] G. Li, J. Miao, J. Cao, J. Zhu, B. Liu\*, **Q. Zhang**\* *Chem Comm.* **2014**, *50*, 7656 – 7658.

[11] C. Wang, J. Wang, P. Li, J. Gao, S. Tan, W. Xiong, B. Hu, P. Lee, Y. Zhao, **Q. Zhang**\* *Chem Asian J.* **2014**, *9*, 779-783

[11] P. Gu, F. Zhou, J. Gao, G. Li, C. Wang, Q. Xu, **Q. Zhang**,\* J. Lu\* *J. Am. Chem. Soc***. 2013**, *135*, 14086–14089.

[13] G. Li, Y. Wu, J. Gao, J. Li, Y. Zhao, **Q. Zhang**\* *Chem. Asian J.* **2013**, *8*, 1574-1578.

[14] J. Li, J. Gao, G. Li, W. Xiong, **Q. Zhang**\* *J. Org. Chem.* **2013**, *78*, 12760-12768.

[15] G. Li, K. Zheng, C. Wang, K. S. Leck, F. Hu,\* X. Sun,\* Q. Zhang\* *ACS Appl. Mater. & interface* **2013**, *5*, 6458–6462

[16] G. Li, Y. Wu, J. Gao, C. Wang, J. Li, H. Zhang, Y. Zhao, Y. Zhao, **Q. Zhang**\* *J. Am. Chem. Soc.* **2012,** *134*, 20298-20301.

[15] Y. Wu, Z. Yin, J. Xiao, Y. Liu, F. Wei, K. Tan, C. Kloc, L. Huang, Q. Yan, F. Hu,\* H. Zhang,\* **Q. Zhang**\* *ACS* *Appl. Mater. Interfaces* **2012**, *4*, 1883-1886.



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