Division of Synthetic Chemistry
– Structural Organic Chemistry –

https://www.scl.kyoto-u.ac.jp/~kouzou/en/index.html

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ZHANG, Sheng (Ph. D.) Henan University, China, P. R., 1 August 2024–7 August 2024
MARGETIC, Davor (Ph. D.) The Rudjer Boskovic Institute, Croatia, 8 October 2024

Scope of Research

Fundamental studies are being conducted for the creation of new functional π-systems with novel structures and properties, and for evaluation of their application as organic semiconducting materials for photovoltaic and electroluminescent devices. The major subjects are: 1) organochemical transformation of fullerenes C_{60} and C_{70}, specifically organic synthesis of endohedral fullerenes by the technique of molecular surgery; 2) generation of ionic fullerene species and their application for the synthesis of functional material; 3) synthesis of new carbon-rich materials by the use of transition metal complex; and 4) creation of new functional π-materials with unique photoelectric properties.

KEYWORDS

π-Conjugated Systems
Functional Materials
Radical Species
Endohedral Fullerenes
Helical Structures

Recent Selected Publications

Zhang, Z.; Zhu, H.; Gu, J.; Shi, H.; Hirose, T.; Jiang, L.; Zhu, Y.; Zhong, D.; Wang, J., Nonplanar Nanographene with a Large Conjugated π-Surface, *J. Am. Chem. Soc*., **146,** 24681-24688 (2024).

Nakazono, R.; Hu, W.; Hirose, T.; Amaya, T., Synthesis and Characterization of a Cyclic Trimer of a Chiral Spirosilabifluorene, *Chem. Eur. J.*, **30,** e202401343 (2024).

Hashikawa, Y.; Okamoto, S.; Murata, Y., Synthesis of Inter-[60]Fullerene Conjugates with Inherent Chirality, *Nat. Commun*., **15,** 514 (2024).

Liu, W.; Huang, G.; Chen, C.-Y.; Tan, T.; Fuyuki, H.; Hu, S.; Nakamura, T.; Truong, M. A.; Murdey, R.; Hashikawa, Y.; Murata, Y.; Wakamiya, A., An Open-Cage Bis[60]fulleroid as Electron Transport Material for Tin Halide Perovskite Solar Cells, *Chem. Commun*., **60,** 2172-2175 (2024).

Huang, G.; Sadai, S.; Hashikawa, Y.; Murata, Y., Reactions of Diaminonaphthalenes with a Cage-Opened C_{60} Derivative, *Asian J. Org. Chem*., **13,** e202300634 (2024).