



堀江正樹 教授

MASAKI HORIE, PROFESSOR

- 日本 東京工業大學 碩士，民國九十年
- 日本 東京工業大學 博士，民國九十三年
- M.Sc. Tokyo Institute of Technology, Japan, 2001
- Ph.D. Tokyo Institute of Technology, Japan, 2004

主要研究領域

- 高分子・超分子光電材料
 - 高分子半導體合成
Synthesis of semiconducting polymers
 - 高分子光電材料與元件（有機太陽能電池・有機場效電晶體）
Fabrication of polymer based electronic devices
 - 超分子光學材料
Supramolecular opto-electronic materials

Main Research Interests

- **Organic opto-electronic materials and devices**

My research interests are synthesis of new semiconducting polymers using organometallic catalysts, characterization, and fabrication of organic electronic devices which involve organic solar cells and organic thin film transistors. I have also focused on supramolecules such as rotaxanes which can control molecular structure by external stimuli e.g photo-irradiation and thermal stimulation in single crystal state. The single crystal should have a completely aligned structure, and will therefore lead to new type of optical, switching, and memory devices with nano-scale order of resolution.

代表作 (Selected Publications)

- Kuo-Lung Wang, Kuan-Ting Chen, Yuan-Hsing Yi, Yi-Hao Hung, Hsing-Yu Tuan*, **Masaki Horie***, “High-Performance Lithium Ion Batteries Combining Submicron Silicon and Thiophene-Terephthalic Acid Conjugated Polymer Binders”, *ACS Sustainable Chem. Eng.* 2020, 8, 1043-1049
- **Masaki Horie***, Chi-Hsien Wang, “Stimuli-Responsive Dynamic Pseudorotaxane Crystals”, Review article in Mechanical Bond and Dynamic Covalent Bond themed collection, *Mater. Chem. Front.* 2019, 3, 2258-2269
- Yen-Jen Lin, Hsin-Yu Chiang, Osamu Oki, Soh Kushida, Shu-Wei Chang, Shih-Ting Chiu, Yohei Yamamoto,* Takuya Hosokai, **Masaki Horie***, “Conjugated Copolymers of Poly(arylenevinylene)s: Synthesis by Ring-Opening Metathesis Polymerization, Film Morphology, and Resonant Luminescence from Microspheres”, *ACS Appl. Polym. Mater.* 2019, 1, 2240-2248.
- Shih-Ting Chiu, Hsin-Yu Chiang, Yen-Jen Lin, Yun-Yung Lu, Hirofumi Tanaka,* Takuya Hosokai, **Masaki Horie***, “Self-Assembly and Ring-Opening Metathesis Polymerization of Cyclic Conjugated Molecules on Highly Ordered Pyrolytic Graphite”, *Chem. Commun.* 2018, 54, 5546-5549.
- Shao-Chi Cheng, Kai-Jen Chen, Yuji Suzuki, Yoshitaka Tsuchido, Ting-Shen Kuo, Kohtaro Osakada, **Masaki Horie***, “Reversible Laser-Induced Bending of Pseudorotaxane Crystals”, *J. Am. Chem. Soc.* 2018, 140, 90–93.
- Chun-Feng Yao, Kuo-Lung Wang, Hsin-Kai Huang, Yen-Jen Lin, Yun-Yang Lee, Chun-Wei Yu, Cho-Jen Tsai, **Masaki Horie***, “Cyclopentadithiophene-terephthalic acid copolymers; synthesis via direct arylation and saponification and applications in Si-based lithium-ion batteries”, *Macromolecules* 2017, 50, 6924–6934.
- Kuo-Lung Wang, Tzu-Husan Kuo, Chun-Feng Yao, Shu-Wei Chang, Yu-Shuo Yang, Cho-Jen Tsai*, **Masaki Horie***, “Cyclopentadithiophene-Benzonic Acid Copolymers as Conductive Binders for Silicon Nanoparticles in Anode Electrode of Lithium Ion Batteries”, *Chem. Commun.* 2017, 53, 1856-1859.
- Kai-Jen Chen, Ya-Ching Tsai, Yuji Suzuki, Kohtaro Osakada, Atsushi Miura, **Masaki Horie***, “Rapid and reversible photoinduced switching of a rotaxane crystal”, *Nat. Commun.* 2016, 7, 1332.

