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Education & Academic Career

1986.4-1990.3	Dept. of Applied Chemistry, Faculty of Eng., Doshisha University (B.Sc.)
1990.4-1994.3	Graduate School of Engineering, Doshisha University (supervisor, Prof. Koji Kano)
1994.3	Ph.D from Doshisha University with top honor
1994.4-2007.3	Assistant Professor of Kyushu University (Prof. Seiji Shinkai's Lab)
2007.4-2011.3	Group Leader, MacroMolecules Group, Organic Nanomaterials Center, National Institute for Materials Science (NIMS)
2011.4-2016.3	Group Leader, Organic Materials Group, Polymer Materials Unit, NIMS
2012.4-2013.3	Manager of Strategy Office, Planning Division, NIMS.
2016.4-2023.3	Group Leader, Molecular Design & Function Group, Research Center for Functional Materials (RCFM), NIMS
2020.4-2023.3	Field Director, Polymers and Biomaterials Field, RCFM, NIMS
2020.4-2023.9	Deputy Director, International Center for Young Scientists (ICYS), NIMS
2021.5-present	Professor, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University (Cross-appointment)
2022.4-2023.3	Deputy Director, RCFM, NIMS
2023.4-present	Director, Research Center for Macromolecules and Biomaterials (RCMB), NIMS
2023.4-present	Group Leader, Molecular Design & Function Group, RCFM, NIMS
1999.6-2000.3	Visiting Scientist of MIT under the MEXT scholarship (Prof. T. M. Swager Lab.)

Award and Honors

- (1) Award for Young Chemist, Division of Biofunctional Chemistry, the Chemical Society of Japan in 2001
- (2) Sumitomo Chemical Award in Synthetic Organic Chemistry, Japan in 2004
- (3) SPP-JPP Young Investigator Award in Porphyrin Chemistry in 2006
(SPP: International Society of Porphyrins and Phthalocyanines)

Research Topics

My research interests include molecular recognition, chemosensors, supramolecular chemistry and materials, functional conjugated polymer, synthetic allosteric recognition system, molecular machinery, etc.

Publications

(i) Original Papers

- (205) K. Sakamoto, K. Bulgarevich, T. Yasuda, T. Minari, **M. Takeuchi**, Origin of Intrinsic Operational Instability in Organic Field-Effect Transistors with Aligned High-Mobility Donor-Acceptor Copolymer Active Layers. *Adv. Mater. Tech.* **9**, 2301503 (2024). DOI: 10.1002/admt.202301503
- (204) Z. Jin, N. Sasaki, N. Kishida, **M. Takeuchi**, Y. Wakayama, K. Sugiyasu,* Two-Dimensional Living Supramolecular Polymerization: Improvement in Edge Roughness of Supramolecular Nanosheets by Using a Dummy Monomer, *Chem. Eur. J.* **29**, e202302181 (2023). DOI: 10.1002/chem.202302181
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- (202) N. Sasaki, J. Kikkawa, Y. Ishii, T. Uchihashi, H. Imamura, M. Takeuchi, K. Sugiyasu,* Multistep, site-selective noncovalent synthesis of two-dimensional block supramolecular polymers, *Nature Chem.* **15**, 922-929 (2023). DOI: 10.1038/s41557-023-01216-y
- (201) H. Anetai,* Y. Matsushita, T. Ohmura, **M. Takeuchi**, Mechanically Flexible Crystals of Benzene Derivatives with Halogen or Methyl Groups. *Crystal Growth & Design*, **23**, 4025-4031 (2023). DOI: 10.1021/acs.cgd.2c01394
- (200) W. Nakanishi,* Y. Matsushita, **M. Takeuchi**, K. Sagisaka,* Dipole-moment-induced supramolecular assembly of a donor-acceptor-type molecule on a metal surface and in a crystal. *Phys. Chem. Chem. Phys.*, **25**, 13702-13707 (2023). DOI: 10.1039/d2cp05982g
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- (196) M. Tan, **M. Takeuchi**,* A. Takai,* Cooperative self-assembling process of core-substituted naphthalenediimide induced by amino-yne click reaction, *Chem. Commun.*, **58**, 7196-7199 (2022). DOI: 10.1039/D2CC02331H

- (195) M. Tan, **M. Takeuchi**,* A. Takai,* Spatiotemporal dynamics of supramolecular polymers by in situ quantitative catalyst-free hydroamination, *Chem.Sci.*, **13**, 4413-4423 (2022). DOI: 10.1039/D2SC00035K
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- (192) J. K. Pious, M. G. Basavarajappa, C. Muthu, R. Nishikubo, A. Saeki, S. Chakraborty*, A. Takai, **M. Takeuchi**, C. Vijayakumar,* Self-Assembled Organic Cations-Assisted Band-Edge Tailoring in Bismuth-Based Perovskites for Enhanced Visible Light Absorption and Photoconductivity, *J. Phys. Chem. Lett.*, **12**, 5758-5764 (2021). DOI: 10.1021/acs.jpcclett.1c01321
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- (173) T. Fukui, T. Uchihashi,* N. Sasaki, H. Watanabe, **M. Takeuchi**,* K. Sugiyasu,* Direct observation and manipulation of supramolecular polymerization by using high-speed atomic force microscopy, *Angew. Chem. Int. Ed.*, **57**, 15465-15470 (2018). DOI: 10.1002/anie.201809165
- (172) S. H. Jung, D. Bochicchio, G. M. Pavan,* **M. Takeuchi**,* K. Sugiyasu,* A Block Supramolecular Polymer and Its Kinetically Enhanced Stability, *J. Am. Chem. Soc.*, **140**, 10570-10577 (2018). DOI: 10.1021/jacs.8b06016
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- (170) C. Sun, M. M. Mróz, J. R. C. Smirnov, L. Lüer, D. Hermida-Merino, C. Zhao, **M. Takeuchi**, K. Sugiyasu, J. Cabanillas-González,* Amplified spontaneous emission in insulated polythiophenes,* *J. Mater. Chem. C*, **6**, 6591-6596 (2018). DOI: 10.1039/C7TC05790C
- (169) J. Aimi,* P.-H. Wang, C.-C. Shih, C.-F. Huang,* T. Nakanishi, **M. Takeuchi**, H.-Y. Hsueh, W.-C. Chen,* A star polymer with a metallo-phthalocyanine core as a tunable charge storage material for nonvolatile transistor memory devices,* *J. Mater. Chem. C*, **6**, 2724-2732 (2018). DOI: 10.1039/C7TC05790C
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- (167) A. Takai* and **M. Takeuchi**,* Catalyst-Free Reaction of Ethynyl- π -Extended Electron Acceptors with Amines, *Bull. Chem. Soc. Jpn.*, **91**, 44-51 (2018). DOI:10.1246/bcsj.20170287
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- (166) S. Sato,* A. Yoshii, S. Takahashi, S. Furumi, **M. Takeuchi**, H. Isobe,* Chiral intertwined spirals and magnetic transition dipole moments dictated by cylinder helicity, *Proc. Natl. Acad. Sci. USA*, **114**, 13097-13101 (2017). DOI:10.1073/pnas.1717524114

- (165) T. Fukui, **M. Takeuchi**,* K. Sugiyasu,* Autocatalytic Time-Dependent Evolution of Metastable Two-Component Supramolecular Assemblies to Self-Sorted or Coassembled State, *Sci. Rep.*, **7**, 2425 (2017). DOI:10.1038/s41598-017-02524-3
- (164) A. Takai,* D. J. Freas, T. Suzuki, M. Sugimoto, J. Labuta, R. Haruki, R. Kumai, S.-i. Adachi, H. Sakai, T. Hasobe, Y. Matsushita, **M. Takeuchi**,* The Effect of highly twisted C=C double bond on the electronic structures of 9,9'-bifluorenylidene derivatives in the ground and excited states, *Org. Chem. Front.*, **4**, 650-657 (2017). DOI:10.1039/C7QO00125H **Highlighted as Back Cover of the issue**
- (163) T. Fukui, S. Kawai, S. Fujinuma, Y. Matsushita, T. Yasuda, T. Sakurai, S. Seki, **M. Takeuchi*** and K. Sugiyasu,* Control over differentiation of a metastable supramolecular assembly in one and two dimensions, *Nature Chem.*, **9**, 493-499 (2017). DOI:10.1038/nchem.2684
- (162) T. Fukui, **M. Takeuchi**,* K. Sugiyasu,* Impact of a subtle structural difference on the kinetic behavior of metastable supramolecular assemblies", *Polymer*, **128**, 311-316 (2017). DOI:10.1016/j.polymer.2016.12.027
- (161) C. Zhao, K. Nagura, **M. Takeuchi**,* K. Sugiyasu,* Twisting poly(3-substituted thiophene)s: cyclopolymerization of gemini thiophene monomers through catalyst-transfer polycondensation, *Polymer J.*, **49**, 133-139 (2017). DOI:10.1038/pj.2016.66
- (160) M. Endo, T. Fukui, S.-H. Jung, S. Yagai, **M. Takeuchi**,* K. Sugiyasu,* Photo-regulated living supramolecular polymerization established by combining energy landscapes of photoisomerization and nucleation-elongation processes, *J. Am. Chem. Soc.* **138**, 11347-11353 (2016). DOI:10.1021/jacs.6b08145
- (159) A. Takai,* T. Kajitani, T. Fukushima, K. Kishikawa, T. Yasuda, **M. Takeuchi**,* Supramolecular Assemblies of Ferrocene-Hinged Naphthalenediimides: Multiple Conformational Changes in Film States, *J. Am. Chem. Soc.*, **138**, 11245-11253 (2016). DOI:10.1021/jacs.6b05824
- (158) C. Zhao, **M. Takeuchi**,* K. Sugiyasu,* Synthesis of Unsheathed Insulated Molecular Wires, *Chem. Lett.*, **45** (10), 1216-1218 (2016). DOI:10.1246/cl.160658
- (157) J. Xu, A. Takai, **M. Takeuchi**,* Multiple emissions from indenofluorenedione in solution and polymer films, *RSC Adv.*, **6**, 80867-80871 (2016). DOI:10.1039/c6ra17765d
- (156) C. Zhao, T. Sakurai, S. Yoneda, S. Seki, M. Sugimoto, C. Oki, **M. Takeuchi**,* K. Sugiyasu,* Stabilization of Charge Carriers in Picket-Fence Polythiophenes Using Dielectric Side Chains, *Chem. Asian J.*, **11**, 2284-2290 (2016). DOI:10.1002/asia.201600738 **Highlighted as Cover of the issue**
- (155) J. Xu, A. Takai, **M. Takeuchi**,* Red-Green-Blue Trichromophoric Nanoparticles with Dual Fluorescence Resonance Energy Transfer: Highly Sensitive Fluorogenic Response Toward Polyanions, *Chem. Eur. J.*, **22**, 13014-13018 (2016). DOI:10.1002/chem.201602759
- (154) G. Mehes, C. Pan, F. Bencheikh, L. Zhao, K. Sugiyasu,* **M. Takeuchi**, J.-C. Ribierre,* C. Adachi,* Enhanced Electroluminescence from a Thiophene-Based Insulated Molecular Wire, *ACS Macro Lett.*, **5**, 781-785 (2016). DOI:10.1002/chem.201600196
- (153) A. Takai,* D. Sakamaki, S. Seki, Y. Matsushita, **M. Takeuchi**,* Ferrocene-substituted naphthalenediimide with broad absorption and electron-transport properties in the segregated-stack structure, *Chem.-Eur. J.*, **22**[22], 7385-7388 (2016). DOI:10.1002/chem.201600196
- (152) J. Aimi,* C.-T. Lo, H.-C. Wu, C.-F. Huang, T. Nakanishi, **M. Takeuchi**, W.-C. Chen,* Phthalocyanine-Cored Star-Shaped Polystyrene for Nano Floating Gate in Nonvolatile Organic Transistor Memory Device, *Adv. Electron. Mater.*, **2**, 1500300 (2016) . DOI: 10.1002/aelm.201500300 **Highlighted in Materials Views China**
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- (150) S. Ogi, V. Stepanenko, K. Sugiyasu, **M. Takeuchi**, F. Würthner,* Mechanism of Self-Assembly Process and Seeded Supramolecular Polymerization of Perylene Bisimide Organogelator, *J. Am. Chem. Soc.*, **137**, 3300-3307 (2015). DOI: 10.1021/ja511952c
- (149) J. Aimi,* M. Komura, T. Iyoda, A. Saeki, S. Seki, **M. Takeuchi**, T. Nakanishi,* Synthesis and self-assembly of phthalocyanine-tethered block copolymers, *J. Mater. Chem. C*, **3**, 2484-2490 (2015). DOI: 10.1039/C4TC02778G **Highlighted as a back cover**
- (148) K. Murayama, Y. Oike, S. Furumi, **M. Takeuchi**, K. Noguchi, K. Tanaka,* Enantioselective Synthesis, Crystal Structure, and Photophysical Properties of a 1,1'-Bitriphenylene-Based Sila[7]helicene, *Eur. J. Org. Chem.*, 1409-1414 (2015). DOI: 10.1002/ejoc.201403565
- (147) S. Ogi, T. Fukui, M. L. Jue, **M. Takeuchi**,* K. Sugiyasu,* Kinetic Control over Pathway Complexity in Supramolecular Polymerization through Modulating the Energy Landscape by Rational Molecular Design, *Angew. Chem. Int. Ed.*, **53**, 14363-14367 (2014). DOI: 10.1002/anie.201407302
- (146) D. Sahoo, K. Sugiyasu, Y. Tian, **M. Takeuchi**, I. G. Scheblykin,* Effect of Conjugated Backbone Protection on Intrinsic and Light-Induced Fluorescence Quenching in Polythiophenes, *Chem. Mater.*, **26**, 4867-4875 (2014). DOI: 10.1021/cm5021959
- (145) K. K. Kartha, A. Sandeep, Vijayakumar C. Nair, **M. Takeuchi**,* A. Ajayaghosh,* carbazole-fluorene molecular hybrid for quantitative detection of TNT using a combined fluorescence and quartz crystal microbalance method, *Phys. Chem. Chem. Phys.* **16**, 18896-18901 (2014). DOI: 10.1039/C4CP03050H
- (144) T. Ikeda, T. Tsukahara, R. Iino, **M. Takeuchi**, H. Noji,* Motion Capture and Manipulation of a Single Synthetic Molecular Rotor by Optical Microscopy, *Angew. Chem. Int. Ed.*, **53**, 10082-10085 (2014). DOI: 10.1002/anie.201403091 **Highlighted as a back cover**
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