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Field Director, Polymers and Biomaterials Field
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Education & Academic Career

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|----------------|--|
| 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-present | Group Leader, Molecular Design & Function Group, Research Center for Functional
Materials (RCFM), NIMS |
| 2020.4-present | Field Director, Polymers and Biomaterials Field, RCFM, NIMS |
| 2020.4-present | Deputy Director, International Center for Young Scientists (ICYS), NIMS |
| 2021.4-present | Professor, Institute of Multidisciplinary Research for Advanced Materials, Tohoku
University (Cross-appointment) |
| 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

- (193) N. Fujisawa, M. Takanohashi, L. Chen, K. Uto, Y. Matsumoto, **M. Takeuchi**, M. Ebara,* A Diels-Alder polymer platform for thermally enhanced drug release toward efficient local cancer chemotherapy, *Sci. Technol. Adv. Mater.* **22**, 522-531 (2021). DOI: 10.1080/14686996.2021.1939152
- (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
- (191) W. Nakanishi,* A. Nakata,* P. Perez, **M. Takeuchi**, C. Joachim, K. Sagisaka,* The Emergence of Multiple Coordination Numbers in GoldCycanoarene Complexes: A Study of the On-Surface Coordination Mechanism, *J. Phys. Chem. C*, **125**, 9937-9946. (2021). DOI: 10.1021/acs.jpcc.1c02456
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- (188) S. K. Keshri, T. Ishizuka, T. Kojima, Y. Matsushita, **M. Takeuchi**,* Long-Range Order in Supramolecular π Assemblies in Discrete Multidecker Naphthalenediimides, *J. Am. Chem. Soc.*, **143**, 3238-3244 (2021). DOI: 10.1021/jacs.0c13389
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- (185) Y. Yamauchi,* S. Samitsu, K. Goto, **M. Takeuchi**, Bottlebrush polymer-reinforced transparent multiphase plastics with enhanced thermal stability, *Chem. Commun.*, **56**, 14641-14644 (2020). DOI: 10.1039/D0CC06769E
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- (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**
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- (154) G. Mehes, C. Pan, F. Bencheikh, L. Zhao, K. Sugiyasu,* **M. Takeuchi**, J.-C. Ribierre,* S. 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**
- (151) S.Kushida, D. Braam, C. Pan, T.D. Dao, L. Tabata, K. Sugiyasu, **M. Takeuchi**, S. Ishii, T. Nagao, A. Lorkem Y. Yamamoto,* Whispering Gallery Resonance from Self-Assembled Microspheres of Highly Fluorescent Isolated Conjugated Polymers, *Macromolecules*, **48**, 3928-3933 (2015). DOI: 10.1021/acs.macromol.5b00707
- (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**
- (143) C. Pan, K. Sugiyasu,* **M. Takeuchi**,* Blending conjugated polymers without phase separation for fluorescent colour tuning of polymeric materials through FRET, *Chem. Commun.*, **50**, 11814-11817 (2014). DOI: 10.1039/C4CC03594A **Highlighted as a back cover**
- (142) C. Pan, K. Sugiyasu,* J. Aimi, A. Sato, **M. Takeuchi**,* Picket-Fence Polythiophene and its Diblock Copolymers that Afford Microphase Separations Comprising a Stacked and an Isolated Polythiophene Ensemble, *Angew. Chem. Int. Ed.*, **53**, 8870-8875 (2014). DOI: 10.1002/anie.201402813 **Highlighted as a frontispiece**
- (141) K. Nakamura, S. Furumi, **M. Takeuchi**, T. Shibuya, K. Tanaka,* Enantioselective Synthesis and Enhanced Circularly Polarized Luminescence of S-Shaped Double Azahelicenes, *J. Am. Chem. Soc.*, **136**, 5555-5558 (2014). DOI: 10.1021/ja500841f
- (140) M. Kiguchi,* T. Ohto, S. Fujii, K. Sugiyasu,* S. Nakajima, **M. Takeuchi**, H. Nakamura,* Single Molecular Resistive Switch Obtained via Sliding Multiple Anchoring Points and Varying Effective Wire Length, *J. Am. Chem. Soc.*, **136**, 7327-7332 (2014). DOI: 10.1021/ja413104g **Highlighted as a cover picture of the issue! and in JACS Spotlight**
- (139) S. Ogi, K. Sugiyasu,* S. Manna, S. Samitsu, **M. Takeuchi**,* Living supramolecular polymerization realized through a biomimetic approach, *Nature Chem.*, **6**, 188-195 (2014). DOI: 10.1038/NCHEM.1849

- (138) S. Xu, S. Ogi, K. Sugiyasu, S. Sumi, Y. Kobayashi, **M. Takeuchi**,* Conductive Poly(2,5-substituted aniline)s Highly Soluble both in Water and Organic Solvents, *J. Nanosci. Nanotechnol.*, **14**, 4449-4454 (2014). DOI: 10.1166/jnn.2013.8280
- (137) R. Wakabayashi, H. Endo, S. Shinkai, K. Ariga, **M. Takeuchi**,* Cross-Linked Conjugated Polymer Assemblies at Air-Water Interface through Supramolecular Bundling, *Dalton Trans.*, 15911-15914 (2013) DOI: 10.1039/C3DT51468D
- (136) C. Pan, K. Sugiyasu,* Y. Wakayama, A. Sato, **M. Takeuchi**,* Thermoplastic Fluorescent Conjugated Polymers: Benefits of Preventing π - π Stacking, *Angew. Chem. Int. Ed.*, **52**, 10775-10779 (2013) DOI: 10.1002/anie.201305728
- (135) J. Xu, A. Takai, Y. Kobayashi, **M. Takeuchi**,* Phosphorescence from pure organic fluorene derivative in solution at room temperature, *Chem. Commun.*, **49**, 8447-8449 (2013). DOI: 10.1039/C3CC44809F **Inside Cover**
- (134) A. Takai, T. Yasuda, T. Ishizuka, T. Kojima, **M. Takeuchi**,* Directly-Linked Ferrocene-Naphthalenediimide Conjugate: Precise Control of Stacking Structures of π -Systems by Redox Stimuli, *Angew. Chem. Int. Ed.*, **52**, 9167-9171 (2013) DOI: 10.1002/anie.201302587
- (133) S. Xu, S. Das, S. Ogi, K. Sugiyasu, H. Okazaki, Y. Takano, T. Yasuda, K. Deguchi, S. Ohki, T. Shimizu, **M. Takeuchi**,* Synthesis of Polyaniline with low Polydispersity using Supramolecular Ionic Assembly as Reaction Media, *Chem. Eur. J.*, **19**, 5824-5829 (2013) DOI: 10.1002/chem.201204134
- (132) M. Shibata, S. Tanaka, T. Ikeda, S. Shinkai, S. Ogi, **M. Takeuchi**,* Stimuli-responsive Folding and Unfolding of a Polymer Bearing Cerium(IV)Bis(porphyrinate)s Multiple Joints: Mechano-imitation of an Action of a Folding Ruler, *Angew. Chem. Int. Ed.*, **52**, 397-400 (2013) DOI: 10.1002/anie.201205584
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- (130) S. Ogi, K. Sugiyasu,* **M. Takeuchi**,* Synthesis and FRET Properties of Alternating Donor—Acceptor Copolymer Featuring Orthogonally Arrayed Transition Dipoles along Polymer Backbone, *ACS Macro Lett.*, **1**, 1199-1203 (2012) DOI: 10.1021/mz300363j **Highlighted in Synfacts**
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- (128) R. Shomura, K. Sugiyasu,* T. Yasuda, A. Sato, **M. Takeuchi**,* Electrochemical Generation and Spectroscopic Characterization of Charge Carriers within Isolated Planar Polythiophene, *Macromolecules*, **45**, 3759-3771 (2012) DOI: 10.1021/ma300373n
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