

# Curriculum Vitae

April 2022

## Yusuke Kinoshita

Specially Appointed Assistant Professor

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## EDUCATION

- April 2006 – March 2010 Bachelor Degree  
Department of Bioscience and Biotechnology, College of Science and Engineering, Ritsumeikan University
- April 2010 – March 2012 Master Degree  
Graduate School of Science and Engineering, Ritsumeikan University
- April 2012 – September 2014 Doctor Degree  
Graduate School of Life Sciences, Ritsumeikan University

## ACADEMIC CAREER

- October 2014 – March 2017 Postdoctoral Fellow  
Laboratory of Bioorganic Chemistry (Prof. Hitoshi Tamiaki),  
Research Organization of Science and Technology,  
Ritsumeikan University
- April 2017 – March 2022 Assistant Professor  
Laboratory of Bioorganic Chemistry (Prof. Hitoshi Tamiaki),  
Department of Applied Chemistry,  
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September 2019 – March 2020 Visiting Researcher

The Nitschke Group (Prof. Jonathan R. Nitschke),  
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University of Cambridge

April 2022 – Present

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## PUBLICATIONS

38. R. Sato, H. Okajima, S. Sugiura, Y. Haketa, **Y. Kinoshita**, H. Tamiaki, A. Sakamoto, H. Maeda, Y. Kobayashi, "Excited-state dynamics of dipyrrolyldiketone difluoroboron complexes," *Phys. Chem. Chem. Phys.*, **24**, 1685–1691 (2022).  
DOI: 10.1039/D1CP04804J
37. H. Ishikawa, A. Demise, Y. Kitagawa, Y. Shinozaki, **Y. Kinoshita**, H. Tamiaki "Difluoroboron complexes of peripheral  $\beta$ -diketonates in cyclophosphorides: Their syntheses and optical properties", *Tetrahedron*, **104**, (2021) 132596.  
DOI: 10.1016/j.tet.2021.132596
36. **Y. Kinoshita**, A. Demise, H. Ishikawa, H. Tamiaki "Synthesis of 13<sup>2</sup>,17<sup>3</sup>-cyclophosphorides and their optical properties," *J. Photochem. Photobiol. A: Chem.*, **420**, 113490 (2021).  
DOI: 10.1016/j.jphotochem.2021.113490
35. K. Sakaguchi, M. Kishi, **Y. Kinoshita**, H. Tamiaki "Self-aggregation of synthetic zinc 3-hydroxymethyl-chlorophyll-*a* derivatives possessing electron-withdrawing groups at the 20-position in aqueous micelle solution," *J. Porphyrins Phthalocyanines*, **25**, 1104–1110 (2021).  
DOI: 10.1142/S1088424621501017
34. J. Harada, T. Mizoguchi, **Y. Kinoshita**, K. Yamamoto, H. Tamiaki, "Over-expression of C8<sup>2</sup>-methyltransferase BchQ in the green sulfur bacterium *Chlorobaculum limnaeum* mutant strains of synthesis of C8-hyper-alkylated chlorosomal pigments," *J. Photochem. Photobiol. A: Chem.*, **404**, 112882 (2021).  
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33. S. Sasaki, Y. Hashimoto, **Y. Kinoshita**, H. Tamiaki, S. Duan, X-F. Wang, M. Yamashita, Y. Saga, H. Yamamoto, T. Ikeuchi, N. Shishioh, "Synthesis of C3/C13-substituted semi-synthetic bacteriochlorophyll-*a* derivatives and their properties as functional dyes," *ChemPhotoChem*, **4**, 5399–5407 (2020).  
DOI: 10.1002/cptc.202000169

32. T. Takeda, A. Katayama, **Y. Kinoshita**, H. Tamiaki, "Synthesis of zinc oxime-functionalized chlorophyll-*a* derivatives and their ( $^{13}\text{E/Z}$ )-dependent self-aggregation," *Tetrahedron*, **76**, 131300 (2020).  
DOI: 10.1016/j.tet.2020.131300
31. Y. Kawamoto, **Y. Kinoshita**, H. Tamiaki, "Synthesis of tin(IV) complexes of chlorophyll-*a* derivatives with two halides as axial ligands and their optical properties in solution," *Tetrahedron*, **76**, 130948 (2020).  
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DOI: 10.1016/j.tet.2020.130948
30. K. Ohashi, **Y. Kinoshita**, H. Tamiaki, "Synthesis of chalcone-type chlorophyll derivatives possessing a bacteriochlorin, chlorin or porphyrin  $\pi$ -system and their optical properties," *Photochem. Photobiol.*, **95**, 755–761 (2019).  
DOI: 10.1111/php.13044
29. Y. Kashiyama, A. Yokoyama, T. Shiratori, S. Hess, F. Not, C. Bachy, A. Gutierrez-Rodriguez, J. Kawahara, T. Suzaki, M. Nakazawa, T. Ishikawa, M. Maruyama, M. Wang, M. Chen, Y. Gong, K. Seto, M. Kagami, Y. Hamamoto, D. Honda, T. Umetani, A. Shihongi, M. Kayama, T. Matsuda, J. Taira, A. Yabuki, M. Tsuchiya, Y. Hirakawa, A. Kawaguchi, M. Nomura, A. Nakamura, N. Namba, M. Matsumoto, T. Tanaka, T. Yoshino, R. Higuchi, A. Yamamoto, T. Maruyama, A. Yamaguchi, A. Uzuka, S. Miyagishima, G. Tanifuji, M. Kawachi, **Y. Kinoshita**, H. Tamiaki, "Taming chlorophylls by early eukaryotes underpinned algal interactions and the diversification of the eukaryotes on the oxygenated Earth," *ISME J.*, **13**, 1899–1910 (2019).  
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28. **Y. Kinoshita**, J. Harada, T. Mizoguchi, H. Tamiaki, "Isolation and optical properties of epimerically pure bacteriochlorophyll-*f* homologs," *Dyes Pigm.*, **164**, 267–271 (2019).  
DOI: 10.1016/j.dyepig.2019.01.041
27. C. Ota, K. Sugihara, **Y. Kinoshita**, Y. Kashiyama, Y. Nagasawa, H. Tamiaki, "Ultrafast excited state dynamics of nonfluorescent cyclophorbide-*a* enol, catabolite of chlorophyll-*a* detoxified in algae-feeding aquatic microbes," *Photochem. Photobiol. Sci.*, **18**, 64–70 (2019).  
DOI: 10.1039/C8PP00173A
26. H. Tamiakia, N. Hagioa, S. Tsuzukia, Y. Cuia, T. Zoutaa, X. Wangb, **Y. Kinoshita**, "Synthesis of carboxylated chlorophyll derivatives and their activities in dye-sensitized solar cells," *Tetrahedron*, **74**, 4078–4085 (2018).  
DOI: 10.1016/j.tet.2018.06.017
25. K. Miyata, S. Yasuda, T. Masuya, S. Ito, **Y. Kinoshita**, H. Tamiaki, T. Oba, "Facile iodination of the vinyl groups in protoporphyrin IX dimethyl ester and subsequent transformation of the iodinated moieties," *Tetrahedron*, **74**, 3707–3711 (2018).

DOI: 10.1016/j.tet.2018.05.040

24. K. Ohashi, **Y. Kinoshita**, H. Tamiaki, "Synthesis of chlorophyll-*a* derivatives possessing the 3-(2-acylethenyl) group by cross-aldol condensation and their optical properties," *Tetrahedron*, **74**, 2703–2715 (2018).

DOI: 10.1016/j.tet.2018.04.018

23. **Y. Kinoshita**, M. Kayama, Y. Kashiya, H. Tamiaki, "In vivo and in vitro preparation of divinyl-13<sup>2</sup>,17<sup>3</sup>-cyclophosphoride-*a* enol," *Bioorg. Med. Chem. Lett.*, **28**, 1090–1092 (2018).

DOI: 10.1016/j.bmcl.2018.02.015

22. J. Harada, Y. Shibata, M. Teramura, T. Mizoguchi, **Y. Kinoshita**, K. Yamamoto, H. Tamiaki, "In vivo excited energy transfer of bacteriochlorophyll *c*, *d*, *e*, or *f* to bacteriochlorophyll *a* in the wild-type and mutant cells of the green sulfur bacterium *Chlorobaculum limnaeum*," *ChemPhotoChem*, **2**, 190–195 (2018).

DOI: 10.1002/cptc.201700164

21. T. Mizoguchi, **Y. Kinoshita**, J. Harada, S. Ogasawara, H. Tamiaki, "Light-dependent accumulation of new bacteriochlorophyll-*e* bearing a vinyl group at the 8-position in the green sulfur bacterium *Chlorobaculum limnaeum*," *J. Photochem. Photobiol. A: Chem.*, **358**, 356–361 (2018).

DOI: 10.1016/j.jphotochem.2017.08.071

20. K. Kim, K. Tsuji, **Y. Kinoshita**, T. Miyatake, H. Tamiaki, "Synthesis of monovinyl- and divinyl-chlorophyll analogs and their physical properties," *Tetrahedron*, **73**, 313–321 (2017).

DOI: 10.1016/j.tet.2016.12.003

19. T. Mizoguchi, **Y. Kinoshita**, J. Harada, H. Tamiaki, "Supramolecular organogelation of bacteriochlorophyll-*c* possessing an isobutyl substituent at the 8-position in carbon tetrachloride," *ChemPlusChem*, **82**, 595–597 (2017).

DOI: 10.1002/cplu.201600494

18. **Y. Kinoshita**, Y. Kitagawa, H. Tamiaki, "Enhancement of light absorption ability of synthetic chlorophyll derivatives by conjugation with difluoroboron diketone group," *Chem. Eur. J.*, **22**, 9996–10001 (2016).

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17. M. Xu, **Y. Kinoshita**, S. Matsubara, H. Tamiaki, "Synthesis of chlorophyll-*c* derivatives by modifying natural chlorophyll-*a*," *Photosynth. Res.*, **127**, 335–345 (2016).

DOI: 10.1007/s11120-015-0190-1

16. **Y. Kinoshita**, H. Tamiaki, "Synthesis and self-aggregation of chlorophyll derivatives possessing a pyrazole ring at the C3 position," *J. Photochem. Photobiol. A: Chem.*, **313**, 27–35 (2015).

DOI: 10.1016/j.jphotochem.2015.04.018

15. M. Xu, **Y. Kinoshita**, H. Tamiaki, "Synthesis of chlorophyll-*f* analogs possessing the 2-formyl group by modifying chlorophyll-*a*," *Bioorg. Med. Chem. Lett.*, **24**, 3997–4000 (2014).  
DOI: 10.1016/j.bmcl.2014.06.022
14. **Y. Kinoshita**, H. Tamiaki, "Regioselective addition of amines to the trifluoromethyl- $\beta$ -diketonate moiety of a chlorophyll derivative." *J. Porphyrins Phthalocyanines*, **18**, 471–474 (2014).  
DOI: 10.1142/S1088424614500217
13. H. Tamiaki, S. Matsunaga, Y. Taira, A. Wada, **Y. Kinoshita**, M. Kunieda, "Synthesis of zinc 20-substituted bacteriochlorophyll-*d* analogs and their self-aggregation," *Tetrahedron Lett.*, **55**, 3351–3354 (2014).  
DOI: 10.1016/j.tetlet.2014.04.057
12. H. Tamiaki, M. Ohata, **Y. Kinoshita**, S. Machida, "Synthesis of 3<sup>2</sup>-nitro-chlorophyll-*a* derivatives and their electronic absorption/emission data," *Tetrahedron*, **70**, 1629–1634 (2014).  
DOI: 10.1016/j.tet.2014.01.020
11. H. Tamiaki, S. Koizumi, K. Tsuji, **Y. Kinoshita**, T. Miyatake, "Synthesis of chlorophyll-*a* derivatives possessing (un)substituted 13<sup>1</sup>-exo-methylene moiety and their optical properties," *Tetrahedron Lett.*, **55**, 1093–1096 (2014).  
DOI: 10.1016/j.tetlet.2013.12.099
10. **Y. Kinoshita**, Y. Yamamoto, H. Tamiaki, "Synthesis, structure, and optical and redox properties of chlorophyll derivatives directly coordinating ruthenium bispyridine at the peripheral  $\beta$ -diketonate moiety," *Inorg. Chem.*, **52**, 9275–9283 (2013).  
DOI: 10.1021/ic400509q
9. H. Tamiaki, N. Ariki, H. Sugiyama, Y. Taira, **Y. Kinoshita**, T. Miyatake, "Synthesis of 3,20-disubstituted chlorophyll-*a* derivatives and reactivity of the substituents," *Tetrahedron*, **69**, 8412–8421 (2013).  
DOI: 10.1016/j.tet.2013.07.060
8. Y. Kashiyaama, A. Yokoyama, T. Shiratori, I. Inouye, **Y. Kinoshita**, T. Mizoguchi, H. Tamiaki, "13<sup>2</sup>,17<sup>3</sup>-Cyclophosphoride *b* enol as a catabolite of chlorophyll *b* in phycophagy by protists," *FEBS Lett.*, **587**, 2578–2583 (2013).  
DOI: 10.1016/j.febslet.2013.06.036
7. H. Tamiaki, R. Monobe, S. Koizumi, T. Miyatake, **Y. Kinoshita**, "Stereoselective reduction, methylation, and phenylation of the 13-carbonyl group in chlorophyll derivatives," *Tetrahedron: Asymmetry*, **24**, 677–682/967–972 (2013).  
DOI: 10.1016/j.tetasy.2013.04.018/10.1016/j.tetasy.2013.06.009
6. H. Tamiaki, K. Azuma, **Y. Kinoshita**, R. Monobe, T. Miyatake, S. Sasaki, "Chemosensitive chlorophyll derivatives: optical detection of various amines by synthetic 3-trifluoroacetyl-13<sup>1</sup>-deoxy-pyropheophorbides in solution," *Tetrahedron*, **69**, 1987–1993 (2013).

DOI: 10.1016/j.tet.2012.12.072

5. **Y. Kinoshita**, M. Kunieda, Y. Mikata, H. Tamiaki, "Synthesis, crystal structure and electronic absorption of chlorophyll derivatives possessing a  $\beta$ -diketonate moiety at the C3 position," *Tetrahedron Lett.*, **54**, 1243–1246 (2013).

DOI: 10.1016/j.tetlet.2012.12.100

4. H. Tamiaki, M. Xu, **Y. Kinoshita**, "Synthesis of oxo-, thioxo- and methylene-substituted bacteriochlorins by modifying chlorophyll-*a* and their electronic absorption in visible and near-infrared regions," *J. Photochem. Photobiol. A: Chem.*, **252**, 60–68 (2013).

DOI: 10.1016/j.jphotochem.2012.10.022

3. H. Tamiaki, N. Kosaka, **Y. Kinoshita**, "Metallation of a cyclic chlorophyll hetero-dyad and optical properties of synthetic metallo-dyads," *Res. Chem. Int.*, **39**, 221–232 (2013).

DOI: 10.1007/s11164-012-0644-4

2. Y. Kashiyaama, A. Yokoyama, **Y. Kinoshita**, S. Shoji, H. Miyashita, T. Shiratori, H. Suga, K. Ishikawa, A. Ishikawa, I. Inouye, K. Ishida, D. Fujinuma, K. Aoki, M. Kobayashi, S. Nomoto, T. Mizoguchi, H. Tamiaki, "Ubiquity and quantitative significance of chlorophyll detoxification catabolism associated with protistan herbivory in aqueous ecosystems," *Proc. Natl. Acad. Sci., USA*, **109**, 17328–17335 (2012).

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1. A. Jesorka, A. R. Holzwarth, A. Eichhöfer, C. M. Reddy, **Y. Kinoshita**, H. Tamiaki, M. Katterle, J.-V. Naubron, T. S. Balaban, "Water coordinated zinc dioxo-chlorin and porphyrin self-assemblies as chlorosomal mimics: variability of the supramolecular interactions," *Photochem. Photobiol. Sci.*, **11**, 1069–1080 (2012).

DOI: 10.1039/C2PP25016K

## AWARDS

1. March 2022 Young Award at Collage of Life Science of Ritsumeikan University