

6. 研究成果リスト

原著論文

1. Ultrafast electron microscopy: Reinventing femtosecond atomic-scale imaging
J. Yang
Research OUTREACH, 112, 26-29 (2020).
DOI: 10.32907/RO-112-2629
2. A compact ultrafast electron diffractometer with relativistic femtosecond electron pulses
J. Yang, K. Gen, N. Naruse, S. Sakakihara, Y. Yoshida
Quantum Beam Science, 2020, 4, 4 (2020).
DOI: 10.3390/qubs4010004
3. Relativistic ultrafast electron microscopy: Single-shot diffraction imaging with femtosecond electron pulses
J. Yang, Y. Yoshida
Advances in Condensed Matter Physics, 2019, 9739241 (2019).
DOI: 10.1155/2019/9739241
4. New crystallography using relativistic femtosecond electron pulses
J. Yang
Impact, 2019, No. 10, 76-78 (2019).
DOI: 10.21820/23987073.2019.10.76
5. Terahertz radiation from combined metallic slit arrays
D. Li, M. Nakajima, M. Tani, J. Yang, H. Kitahara, M. Hashida, M. Asakawa, W. Liu, Y. Wei, Z. Yang
Scientific Reports 9, 6804 (2019).
DOI: 10.1038/s41598-019-43072-2
6. Improvement of 6D brightness by a 1.4-cell photocathode RF gun for MeV ultrafast electron diffraction
Y. Song, J. Yang, C. Tsai, K. Fan
J. Physics, 1350, 012048 (2019).
DOI: 10.1088/1742-6596/1350/1/012048
7. 二帯域同時マイケルソン干渉計型バンチ長測定装置の開発
野澤 一太, 菅 晃一, 神戸 正雄, 楊 金峰, 近藤 孝文, 吉田 陽一
加速器, 16, No. 1, 2-14 (2019)
DOI: なし

8. Incorporation of chemical amplification in dual insolubilization resists,
S. Enomoto, T. Yoshino, K. Machida, and T. Kozawa,
Jpn. J. Appl. Phys. 58 (2019) 056504.
9. Proton transfer accompanied with oxidation reaction of adenosine,
J. Choi, S. Tojo, D-S Ahn, M. Fujitsuka, S. Miyamoto, K. Kobayashi, H. Ihee, and
T. Majima,
Chem. Eur. J. 25 (2019) 7711.
10. Relationship between Resolution Blur and Stochastic Defect of Chemically
Amplified Resists Used for Extreme Ultraviolet Lithography,
T. Kozawa, J. J. Santillan, and T. Itani,
J. Photopolym. Sci. Technol. 32 (2019) 161-167.
11. Theoretical study on effects of electron thermal energy on sensitization process of
chemically amplified electron beam resists—contribution to resist heating effect in
electron beam mask writing,
T. Kozawa and T. Tamura,
Jpn. J. Appl. Phys. 58 (2019) 116503.
12. Theoretical study on trade-off relationships between resolution, line edge roughness,
and sensitivity in photomask production by electron beam lithography,
T. Kozawa and T. Tamura,
Jpn. J. Appl. Phys. 58 (2019) 076501.
13. Theoretical study on trade-off relationships between resolution, line edge roughness,
and sensitivity in resist processes for semiconductor manufacturing by extreme
ultraviolet lithography,
T. Kozawa,
Jpn. J. Appl. Phys. 58 (2019) 096502.
14. Pulse radiolysis of carboxylic acids used as ligands of metal oxide nanocluster
resists,
T. Yamada, Y. Muroya, S. Yamashita, Y. Komuro, D. Kawana, A. Yamazaki, and
T. Kozawa,
Jpn. J. Appl. Phys. 58 (2019) 096504.

15. Synthesis and Property of Tellurium-Containing Molecular Resist Materials for Extreme Ultraviolet Lithography System,
H. Kudo, M. Fukunaga, T. Yamada, S. Yamakawa, T. Watanabe, H. Yamamoto, K. Okamoto, and T. Kozawa,
J. Photopolym. Sci. Technol. 32 (2019) 805-810.
16. Evidence for a critical dose above which damage to carbonate ester bonds in PADC appear after gamma ray and ultra soft X-ray exposures,
T. Kusumotoa,, S. Okada, H. Kurashigec, K. Kobayashi, M. Fromm, Q. Raffy, N. Ludwig, M. Kanasakig, K. Oda, Y. Honda, S. Tojo, J.-E Groetz, R. Ogawara, S. Kodaira, R. Barillon, T. Yamauchi,
Radiat. Phys. Chem. 170 (2020) 108628.
17. Dissolution kinetics of poly(4-hydroxystyrene) with different molecular weight distributions in alkaline aqueous solution,
Ayako Nakajima, Kyoko Watanabe, Kyoko Matsuoka, Takahiro Kozawa,
Yoshitaka Komuro, Daisuke Kawana and Akiyoshi Yamazaki,
Jpn. J. Appl. Phys. 59 (2020) 036505.
18. Theoretical study on protected unit fluctuation of chemically amplified resists used for photomask production by electron beam lithography,
Takahiro Kozawa and Takao Tamura,
Jpn. J. Appl. Phys. 59 (2020) 016503.
19. Fabrication of Iron Oxide Nanoparticles via Submerged Photosynthesis and the Morphologies under Different Light Sources,
Lihua Zhang, Melbert Jeem, Kazumasa Okamoto, Seiichi Watanabe,
ISIJ International 2019, ISIJINT-2019-188.
20. Ultrafast spectroscopic study of plasmon-induced hot electron transfer under NIR excitation in Au triangular nanoprisms/g-C₃N₄ for photocatalytic H₂ production
D. Ruan, J. Xue, M. Fujitsuka, T. Majima
Chem. Commun. 55, 2019, 6014–6017.

21. *In situ* observation of NiS nanoparticles depositing on single TiO₂ mesocrystal for enhanced photocatalytic hydrogen evolution activity
X. Shi, S. Kim, M. Fujitsuka, T. Majima
Appl. Catal. B **254**, **2019**, 594–600.
22. Size-dependent relaxation processes of photo-excited [n]cycloparaphenylenes ($n = 5\text{--}12$): Significant contribution of internal conversion in smaller rings
M. Fujitsuka, C. Lu, B. Zhuang, E. Kayahara, S. Yamago, T. Majima
J. Phys. Chem. A **123**, **2019**, 4737–4742.
23. Proton transfer accompanied with oxidation reaction of adenosine
J. Choi, S. Tojo, D.-S. Ahn, M. Fujitsuka, S. Miyamoto, K. Kobayashi, H. Ihee, T. Majima
Chem. Eur. J. **25**, **2019**, 7711–7718.
24. Dual function of graphene oxide for assisted exfoliation of black phosphorus and electron shuttle in promoting visible and near-infrared photocatalytic H₂ evolution
M. Zhu, M. Fujitsuka, L. Zeng, M. Liu, T. Majima
Appl. Catal. B **256**, **2019**, 117864.
25. Monitoring transport behavior of charge carriers in a single CdS@CuS nanowire via *in-situ* single-particle photoluminescence spectroscopy
M. Zhu, C. Zhai, S. Kim, M. Fujitsuka, T. Majima
J. Phys. Chem. Lett. **10**, **2019**, 4017–4024.
26. Charge-separated mixed valency in an unsymmetrical acceptor–donor–donor triad based on diarylboryl and triarylamine units
K. Tahara, H. Koyama, M. Fujitsuka, K. Tokunaga, X. Lei, T. Majima, J.-I. Kikuchi, Y. Ozawa, M. Abe
J. Org. Chem. **84**, **2019**, 8910–8920.
27. Single-molecule and -particle probing crystal edge/corner as highly efficient photocatalytic sites on a single TiO₂ particle
W.-K. Wang, J.-J. Chen, Z.-Z. Lou, S. Kim, M. Fujitsuka, H.-Q. Yu, T. Majima
Proc. Natl. Acad. Sci. USA **116**, **2019**, 18827–18833.

28. Effect of organic additives during hydrothermal syntheses of rutile TiO₂ nanorods for photocatalytic applications
Y. Yamazaki, M. Fujitsuka, S. Yamazaki
ACS Appl. Nano Mater. 2, **2019**, 5890–5899.
29. Shallow trap state induced efficient electron transfer at the interface of heterojunction photocatalysts: The crucial role of vacancy defects
J. Xue, M. Fujitsuka, T. Majima
ACS Appl. Mater. Interfaces 11, **2019**, 40860–40867.
30. Visible light-driven photocatalytic duet reaction catalyzed by the B12-rhodium-titanium oxide hybrid catalyst
K. Shichijo, M. Fujitsuka, Y. Hisaeda, H. Shimakoshi
J. Organomet. Chem. 907, **2020**, 121058.
31. Exfoliated Mo₂C nanosheets hybridized on CdS with fast electron transfer for efficient photocatalytic H₂ production under visible light irradiation
D. Ruan, M. Fujitsuka, T. Majima
Appl. Catal. B 264, **2020**, 118541.
32. Ultrathin ZnIn₂S₄ nanosheets with active (110) facet exposure and efficient charge separation for cocatalyst free photocatalytic hydrogen evolution
X. Shi, L. Mao, P. Yang, H. Zheng, M. Fujitsuka, J. Zhang, T. Majima
Appl. Catal. B 265, **2020**, 118616.
33. Near bandgap excitation inhibits the interfacial electron transfer of semiconductor/cocatalyst
J. Xue, M. Fujitsuka, T. Majima
ACS Appl. Mater. Interfaces 12, **2020**, 5920–5924.
34. Enzymatic activation of indolequinone-substituted 5-fluorodeoxyuridine prodrugs in hypoxic cells
Y. Jiho, R. Kurihara, K. Kawai, H. Yamada, Y. Uto, K. Tanabe
Bioorg. Med. Chem. Lett. 29, **2019**, 1304–1307.

35. Synthesis and photocatalytic activity of ultrathin two-dimensional porphyrin nanodisks via covalent organic framework exfoliation
Z. Fan, K. Nomura, M. Zhu, X. Li, J. Xue, T. Majima, Y. Osakada
Commun. Chem. 2, **2019**, 55.
36. Synthesis of unsymmetric perylenediimide dye molecule and its photochemical properties on lipid membrane
A. Tanaka, Z. Liu, Y. Osakada
Bioorg. Med. Chem. Lett. 29, **2019**, 1899-1903.
37. Sulfonated pyrene as a photo-regulator for single-stranded DNA looping
J. Xu, S. Miyamoto, S. Tojo, K. Kawai
Chem. – Eur. J. doi.org/10.1002/chem.202000184.
38. Study on irradiation effect of insulating materials for fusion superconducting magnet: Change in electric insulation performance by irradiation
S. Kito, Y. Akiyama, S. Nishijima,
IOP Conference Series: Materials Science and Engineering,
Volume 502, 012195 (2019).

著書

1. Femtosecond electron diffraction using relativistic electron pulses
J. Yang
“Femtosecond Imaging” edited by J. Yang, InTechOpen, London, UK, 2020 (ISBN 978-1-83880-051-2)
DOI: 10.5772/intechopen.88511
2. Femtosecond pulse radiolysis
J. Yang, K. Kan, M. Gohdo, Y. Yoshida
“Femtosecond Imaging” edited by J. Yang, InTechOpen, London, UK, 2020 (ISBN 978-1-83880-051-2)
DOI: 10.5772/intechopen.91691
3. Ultrafast electron microscopy with relativistic femtosecond electron pulses
J. Yang

“Electron Microscopy – Novel Microscopy Trends” edited by M. Arita and N. Sakaguchi, InTechOpen, London, UK, 2019 (ISBN 978-1-83881-882-1)
DOI: 10.5772/intechopen.81405

Reviews

1. ESRから調べるDNAの放射線傷害機構
小林一雄
放射線化学 2020年 No.109 P19-24.
2. blinking制御による核酸1分子分析～1分子の反応速度を測る～
川井清彦
生命化学研究レター, 58, 2019, 5-10.
3. Kinetics of Photo-Induced Reactions at the Single-Molecule Level: The KACB Method
K. Kawai, A. Maruyama
Chem. – Eur. J., doi.org/10.1002/chem.202000439
4. 高強度テラヘルツパルスによる有機固体のアブレーション,
永井 正也,
光学, 48, (10) 407-411 (2019.7).