

PUBLICATIONS

2022

Initial yield of hydrated electron production from water radiolysis based on first-principles calculation
T. Kai, T. Toigawa, Y. Matsuya, Y. Hirata, T. Tezuka, H. Tsuchida, and A. Yokoya
RSC Adv. 13, 7076-7086 (2023).

Orientation-dependent electrochemical reduction and proton evolution in the oxygen-deficient perovskite $\text{SrFeO}_{2.5+y}$
Y. Isoda, D. Kan, T. Majima, and Y. Shimakawa
Appl. Phys. Express 16, 015506(1-5) (2023).

Effect of molecular axis orientation of 3.6 MeV Si^{2+} projectiles on the ion-induced secondary electron emission from a carbon foil
N. Uno, T. Majima, M. Saito, and H. Tsuchida
Nucl. Instrum. Methods Phys. Res., Sect. B: Beam Interactions with Materials and Atoms 535, 215-220 (2023).

Fast heavy-ion-induced anion-molecule reactions on the methanol droplet surface
T. Majima, Y. Mizunami, T. Teramoto, H. Tsuchida, and M. Saito
J. Phys. Chem. A 126, 8988-8996 (2022).

Basic studies toward ultrafast soft x-ray photoelectron diffraction; its application to probing local structure in iodobenzene molecules
T. Teramoto, S. Minemoto, T. Majima, T. Mizuno, J. H. Mun, A. Yagishita, P. Decleva, S. Tsuru
Struct. Dyn. 9, 024303(1-12) (2022).

Electrochemical control and protonation of the strontium iron oxide SrFeO_y by using proton-conducting electrolyte
Y. Isoda, D. Kan, Y. Ogura, T. Majima, T. Tsuchiya, and Y. Shimakawa
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Incident energy dependence of the molecular orientation effect of MeV C_2^+ projectiles in secondary ion emission processes
R. Murase, H. Tsuchida, S. Nakagawa, S. Tomita, A. Chiba, K. Nakajima, T. Majima, and M. Saito
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Toward the elucidation of biomolecular damage in liquid water near tracks caused by ion beams
H. Tsuchida, T. Majima, and T. Kai
JSAP Review 2022, Article ID: 220413 (2022).

Projectile dependence in dissociation on biomolecules by swift heavy ion irradiation
T. Tezuka, M. Hongo, T. Majima, M. Saito, and H. Tsuchida

29TH int. conf. on atomic collisions in solids (ICACS29) & 11TH int. symp. on swift heavy ions in matter (SHIM11) (Jun. 19-24, 2022, Helsinki, Finland).

Effect of molecular axis orientation of 3.6 MeV Si_2^+ on secondary electron emission from carbon foils
N. Uno, T. Majima, M. Saito, and H. Tsuchida
29TH int. conf. on atomic collisions in solids (ICACS29) & 11TH int. symp. on swift heavy ions in matter (SHIM11) (Jun. 19-24, 2022, Helsinki, Finland).

Delayed fragmentation of nucleobases following MeV ion collisions
T. Nakao, R. Takasu, H. Tsuchida, M. Saito, and T. Majima
29TH int. conf. on atomic collisions in solids (ICACS29) & 20th Int. Conf. on the Physics of Highly Charged Ions (HCI20) (Aug. 29-Sep. 3, 2022, Matsue, Japan).

Delayed fragmentation of biomolecules induced by MeV ion collisions
T. Nakao, R. Takasu, S. Li, H. Tsuchida, M. Saito and T. Majima
The 14th Asian Int. Seminar on Atomic and Molecular Physics (AISAMP 14) (Feb. 13-17, 2023) Online.

High aspect (>20) etching with reactive gas cluster injection
T. Seki, H. Yamamoto, K. Koike, T. Aoki and J. Matsuo
Jpn. J. Appl. Phys., 2022 年 61 卷 p. SI1007 (doi:10.35848/1347-4065/ac6565).

GaN etching with reactive gas cluster injection
T. Seki, H. Yamamoto, K. Koike, T. Aoki and J. Matsuo
43rd Int. Symp. on Dry Process (DPS2022) (On-Line 2022.11.24) Poster.

MeV-SIMS Measurement of Negative Electrode Surface of Lithium Ion Battery at Atmospheric Pressure
T. Seki and J. Matsuo
14th Int. Symp. on Atomic Level Characterizations for New Materials and Devices '22(ALC '22) (2022.10.20, Okinawa, Japan) Oral.

Molecular Structure of Sputtered Neutral Species with Cluster Ion
J. Matsuo, M. Sugimoto, N. Sano and T. Seki
14th Int. Symp. on Atomic Level Characterizations for New Materials and Devices '22(ALC '22) (2022.10.21, Okinawa, Japan) Poster.

Ambient MeV-SIMS Measurement of Negative Electrode Surface of Lithium Ion Battery

T. Seki and J. Matsuo

18th Int. Conf. on Nuclear Microprobe Technology and Applications(ICNMTA) (On-Line 2022.9.13, Ljubljana, Slovenia) Oral.

Chemical Structure of Organic Molecules Sputtered with Cluster Ions

J. Matsuo

2022 Int. Conf. on Secondary Ion Mass Spectrometry (SIMS 23) (2022.9.20) Invited.

Collisions of Cluster Ions: Fundamental Phenomena and Applications

J. Matsuo

European Association on Applications of Surface and Interface Analysis (ECASIA'22) (2022.6.2) Invited.

A Study on extension of horizontal heat transport distance in self-excited oscillating heat pipe

Z. Kawara, T. Yokomine and Y. Kawasaki

The 22nd Tsinghua-Seoul National-Kyoto University Thermal Eng. Conf.(Dec. 9, 2022) Online.

Structural Approach to Understanding the Formation of Amorphous Metal Hydroxides

T. Kobayashi, T. Fushimi, H. Mizukoshi, R. Motokawa, T. Sasaki

Langmuir, 38, 14656-14665 (2022).

Phase analysis of simulated nuclear fuel debris synthesized using UO₂, Zr, and stainless steel and leaching behavior of the fission products and matrix elements

R. Tonna, T. Sasaki, Y. Kodama, T. Kobayashi, D. Akiyama, A. Kirishima, N. Sato, Y. Kumagai, R. Kusaka¹, M. Watanabe

Nucl. Eng. Technol., 55, 1300-1309 (2023).

Structure, stability, and actinide leaching of simulated nuclear fuel debris synthesized from UO₂, Zr, and stainless-steel

A. Kirishima, D. Akiyama, Y. Kumagai, R. Kusaka, M. Nakada, M. Watanabe, T. Sasaki, N. Sato

J. Nucl. Mater., 567 153842 (2022).

Raman identification and characterization of chemical components included in simulated nuclear fuel debris synthesized from uranium, stainless steel, and zirconium

R. Kusaka, Y. Kumagai, M. Watanabe, T. Sasaki, D. Akiyama, N. Sato, A. Kirishima

J. Nucl. Sci. Technol., 60, 603-613 (2023).

Crystal orientation of hafnium nitride thin films prepared at different positions by rf magnetron sputtering

T. Osumi and Y. Gotoh

The 22nd Int. Vacuum Congress IVC22, ISSP/SE, Sapporo, Japan, September 11-16, 2023, Thu-H1-6.

Interplay between Oxygen Octahedral Rotation and Deformation in the Acentric ARTiO₄ Series toward Negative Thermal Expansion

S. Yoshida, H. Akamatsu, A. S. Gibbs, S. Kawaguchi, V. Gopalan, K. Tanaka, and K. Fujita
Chem. Mater., 34 (2022) 6492-6504.

Topochemical Synthesis of LiCoF₃ with a High-Temperature LiNbO₃-Type Structure

Y. Matsuo, Y. Matsukawa, M. Kitakado, G. Hasegawa, S. Yoshida, R. Kubonaka, Y. Yoshida, T. Kawasaki, E. Kobayashi, C. Moriyoshi, S. Ohno, K. Fujita, K. Hayashi, and H. Akamatsu
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Bi₁₂O₁₇Cl₁₂ with a Sextuple Bi-O Layer Composed of Rock-Salt and Fluorite Units and its Structural Conversion through Fluorination to Enhance Photocatalytic Activity

D. Kato, O. Tomita, R. Nelson, M. A. Kirsanova, R. Dronskowski, H. Suzuki, C. Zhong, C. Tassel, K. Ishida, Y. Matsuzaki, C. M. Brown, K. Fujita, K. Fujii, M. Yashima, Y. Kobayashi, A. Saeki, I. Oikawa, H. Takamura, R. Abe, H. Kageyama, T. E. Gorelik, and A. M. Abakumov

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Possibility of the existence of a topological defect in dynamic deformation of the free-standing ultrathin silicon wafer during MeV ion irradiation

H. Minagawa and H. Tsuchida

J. Appl. Phys. 131, 08701 (2022).

Electrochemical control and protonation of the strontium iron oxide SrFeO_y by using proton-conducting electrolyte

Y. Isoda, D. Kan, Y. Ogura, T. Majima, T. Tsuchiya, and Y. Shimakawa

Appl. Phys. Lett. 120, 091601(1-5) (2022).

Incident energy dependence of the molecular orientation effect of MeV C₂⁺ projectiles in secondary ion emission processes

R. Murase, H. Tsuchida, S. Nakagawa, S. Tomita, A. Chiba, K. Nakajima, T. Majima, and M. Saito

J. Phys. Soc. Jpn. 91, 024302(1-7) (2022).

Effect of structure and orientation of incident carbon cluster ions C_n⁺ (n ≤ 4) on secondary-ion emission induced by electronic excitation

R. Murase, H. Tsuchida, S. Nakagawa, S. Tomita, A. Chiba, K. Nakajima, T. Majima, and M. Saito

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- Photoelectron angular distribution studies for two spin-orbit-split components of Xe 3d subshell: A critical comparison between theory and experiment
S. Minemoto, T. Teramoto, T. Majima, T. Mizuno, Tomoya; J.H. Mun, S.H. Park, S. Kwon, A. Yagishita, D. Toffoli
J. Phys. B: Atomic, Molecular and Optical Physics 54, 105003(1-11) (2021).
- Coincidence measurements between secondary ions and scattered projectiles in collisions of MeV-energy heavy ion with submicron droplets
T. Majima, S. Mizutani, Y. Mizunami, K. Kitajima, H. Tsuchida, and M. Saito
32th Int. Conf. on Photonic, Electronic, and Atomic Collisions (ICPEAC32), July 20-23, 2021, Online.
- Mass spectrometric study of MeV-ion-induced reactions on submicron ethanol droplet surfaces
T. Majima, S. Mizutani, K. Kitajima, Y. Mizunami, H. Tsuchida, and M. Saito
The Miller Online Workchop on Radiation Chemistry, Feb. 10-12, 2022, Online.
- Sputtering of Organic Molecules with Cluster Ion Beams
J. Matsuo
8th Int. Symp. of SIMS China (Hybrid conference, 2021/11/12-14) Plenary talk.
- High aspect (> 20) etching with reactive gas cluster injection
T. Seki, H. Yamamoto, K. Koike, T. Aoki and J. Matsuo
42nd Int. Symp. on Dry Process (DPS 2021) (Online, 2021/11/19) Poster Session.
- A New Tool for Characterization and Processing of Organic and Biological Materials
J. Matsuo
AVS 67 Virtual Symp. (On-Demand, 2021/10/25-10/30) Invited.
- SIMS measurement of PEG1000 containing ionic liquid
R. Fukunaga, T. Seki and J. Matsuo
13th Int. Symp. on Atomic Level Characterizations for New Materials and Devices '21 (ALC'21 Online) (On-Line 2021/10/19) Poster Session.
- General Discussion on Terminal Velocity for Rising Single Bubble
Q. Wang, Z. Kawara, T. Yokomine, T. Kunugi
28th Int. Conf. on Nucl. Engng, ICONE28-64697, Aug. 4-6, 2021, Online.
- Influence of hydrodynamic interactions among multiple bubbles on convective heat transfer in nucleate boiling
M. Takeyama, M. Zupančič T. Kunugi
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- Overview of recent progress on steady state operation of all-metal plasma facing wall device QUEST
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Nucl. Mater. Energy 27 (2021) 101013.
- Development of a Field Emission Image Sensor Tolerant to Gamma-Ray Irradiation
Goto, Y., Tsuji, H., Nagao, M., Masuzawa, T., Neo, Y., Miura, H., Okamoto, T., Igari, T., Akiyoshi, M., Sato, N., Takagi, I.
IEEE Transactions on Electron Devices 67 (2020) 1660-1665.
- Sorption of Cs⁺ and Eu³⁺ ions onto sedimentary rock in the presence of gamma-irradiated humic acid
Qi Zhao, T. Saito, K. Miyakawa, H. Sasamoto, T. Kobayashi, T. Sasaki
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- Nanoscope structure of borosilicate glass with additives for nuclear waste vitrification
R. Motokawa, K. Kaneko, Y. Oba, T. Nagai, Y. Okamoto, T. Kobayashi, T. Kumada, W. T. Heller
J. Non-Cryst. Solids 578 (2022) 121352.
- Solubility of Mixed Lanthanide Hydroxide and Oxide Solid Solutions
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J. Nucl. Fuel Cycle Waste Technol., Vol. 19, No. 3, 353-366 (2021).
- Phase transformation of mixed lanthanide oxides in an aqueous solution
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J. Nucl. Radiochem. Sci., Vol. 21, 15-27 (2021).
- Distribution of studtite and metastudtite generated on the surface of U₃O₈: application of Raman imaging technique to uranium compound
R. Kusaka, Y. Kumagai, T. Yomogida, M. Takanoa, M. Watanabe, T. Sasaki, D. Akiyama, N. Sato, A. Kirishima
J. Nucl. Sci. Technol., 58(6), 629-634 (2021).
- Radiocaesium accumulation capacity of epiphytic lichens and adjacent barks collected at the perimeter boundary site of the Fukushima Dai-ichi Nuclear Power Station
T. Dohi, Y. Ohmura, K. Yoshimura, T. Sasaki, K.

Fujiwara, S. Kanaizuka, S. Nakama, K. Iijima
PLoS ONE 16(5): e0251828 (2021).

Uranium dissolution and uranyl peroxide formation by immersion of simulated fuel debris in aqueous H₂O₂ solution

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Oxygen Release and Storage Property of Fe–Al Spinel Compounds: A Three-Way Catalytic Reaction over a Supported Rh Catalyst

K. Fujita, H. Asakura, S. Hosokawa, K. Teramura, M. Kobayashi, K. Fujita, and T. Tanaka
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Structural Origin of Thermal Shrinkage in Soda-Lime Silicate Glass below the Glass Transition Temperature: A Theoretical Investigation by Microsecond Timescale Molecular Dynamics Simulations

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Topochemical Synthesis of Perovskite-type CuNb₂O₆ with Colossal Dielectric Constant

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H. Li, S. Kobayashi, C. Zhong, M. Namba, Y. Cao, D. Kato, Y. Kotani, Q. Lin, M. Wu, W. Wang, M. Kobayashi, K. Fujita, C. Tassel, T. Terashima, A. Kuwabara, Y. Kobayashi, H. Takatsu, and H. Kageyama
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Electrochemical control and protonation of the strontium iron oxide SrFeO_y by using proton-conducting electrolyte

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Relation between biomolecular dissociation and energy of secondary electrons generated in liquid water by fast heavy ions

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In-situ total Li depth profiling of solid state Li ion batteries under charging and discharging by means of transmission elastic recoil detection analysis with 5 MeV He²⁺ ions

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Hidetsugu Tsuchida (invited talk)
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- X-ray Photoelectron Angular Distributions from Organic Molecules by Femtosecond Soft X-ray Free Electron Lasers at PAL-XFEL
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