

熱・エントロピー科学研究センター業績リスト(2022)
Publications from
the Research Center for Thermal and Entropic Science

[Articles are classified according to original paper (mark O), review article (R), book (B), translation (T) and miscellaneous (M). An asterisk attached to mark-letter indicates that the article has been published in Japanese.]

- O-1 Association with Imidazole in the Cooperative Order-Disorder Transition in Aqueous Solution of Schizophyllan
K. Yoshiba, Y. Yasuda, B. E. Christensen, C. Kondo, Y. Miyazaki, and M. Nakano
Langmuir **38**(5), 1748–1756 (2022).
- O-2 Scanning Probe Analysis of Twisted Graphene Grown on a Graphene/Silicon Carbide Template
Y. Yao, R. Negishi, D. Takajo, M. Takamura, Y. Taniyasu, and Y. Kobayashi
Nanotechnology **33**(15), 155603 (2022) (8 pages).
- O-3 Enhancement of the Magnetoelectric Effect Using the Dynamic Jahn-Teller Effect in a Transition-Metal Complex
Y. Otsuki, S. Kimura, S. Awaji, and M. Nakano
Phys. Rev. Lett. **128**(11), 117601 (2022) (6 pages).
- O-4* 天然ゴムの力学熱量効果の高分解能測定
松尾隆祐, 鈴木 晴, 高城大輔
日本ゴム協会誌 **95**(7), 212–218 (2022).
- O-5 An Organic Quantum Spin Liquid with Triangular Lattice: Spinon Fermi Surface and Scaling Behavior
T. Kusamoto, C. Ohde, S. Sugiura, S. Yamashita, R. Matsuoka, T. Terashima, Y. Nakazawa, H. Nishihara, and S. Uji
Bull. Chem. Soc. Jpn. **95**(2), 306–313(2022).
- O-6 Melamine-Induced Synthesis of a Structurally Perfect Kagomé Antiferromagnet
Y. Shen, K. Sugimoto, S. Yamashita, T. Yoshida, Y. Nakazawa, B. K. Breedlove, H. Zhang, M. Yamashita
Chem. Commun. **58**(23), 3763–3766 (2022).

- O-7 Porous Mn^{2+} Magnet with a PtCl Framework: Correlation between Water Vapor Adsorption/Desorption and Slow Magnetic Relaxation
H. Nakajima, K. Uchida, T. Yoshida, Y. Horii, T. Sato, Z. Luming, S. Yamashita, Y. Nakazawa, V. C. Agulto, M. Nakajima, B. K. Breedlove, M. Yamashita, H. Iguchi, and S. Takaishi
ChemPhysChem **2022**, e202200618 (2022) (7 pages).
- O-8 Electronic Heat Capacity and Lattice Softening of Partially Deuterated Compounds of κ -(BEDT-TTF) $_2\text{Cu}[\text{N}(\text{CN})_2]\text{Br}$
Y. Matsumura, S. Imajo, S. Yamashita, H. Akutsu, and Y. Nakazawa
Crystals **12**(1), 2 (2022) (12 pages).
- O-9 A 2D Interactive Spin Ladder System, δ' -(BEDT-TTF) $_2\text{ClC}_2\text{H}_4\text{SO}_3\cdot\text{H}_2\text{O}$
H. Akutsu, S. S. Turner, and Y. Nakazawa
Cryst. Growth Des. **22**(9), 5143–5147 (2022).
- O-10 Enantiopure and Racemic Radical-Cation salts of $\text{B}(\text{mandelate})_2^-$ and $\text{B}(2\text{-chloromandelate})_2^-$ Anions with BEDT-TTF
T. J. Blundell, J. R. Lopez, K. Sneade, J. D. Wallis, H. Akutsu, Y. Nakazawa, S. J. Coles, C. Wilson, and L. Martin
Dalton. Trans. **51**(12), 4843–4852 (2022).
- O-11 Role of the Anion Layer's Polarity in Organic Conductors β'' -(BEDT-TTF) $_2\text{XC}_2\text{H}_4\text{SO}_3$ (X = Cl and Br)
H. Akutsu, M. Uruichi, S. Imajo, K. Kindo, Y. Nakazawa, and S. S. Turner
J. Phys. Chem. C **126**(38), 16529–16538 (2022).
- O-12 Enhancements of Superconductivity and Insulating Electrical Resistivity under the Same Uniaxial Strain in a Molecular Conductor
Y. Okii, T. Yamamoto, T. Naito, K. Konishi, H. Akutsu, and Y. Nakazawa
J. Phys. Soc. Jpn. **91**(3), 034707 (2022) (9 pages).
- O-13 Thermodynamic measurements of doped dimer-Mott organic superconductor under pressure
Y. Matsumura, S. Yamashita, H. Akutsu, and Y. Nakazawa
Low Temp. Phys. **48**(1), 51–56 (2022).

- O-14 Molecular Conductors from Bis(ethylenedithio)tetrathiafulvalene with Tris(oxalato)gallate and Tris(oxalato)iridate
T. J. Blundell, A. L. Morritt, E. K. Rusbridge, L. Quibell, J. Oakes, H. Akutsu, Y. Nakazawa, S. Imajo, T. Kadoya, J. Yamada, S. J. Coles, J. Christensen, and L. Martin
Mater. Adv. **3**(11), 4724–4735 (2022).
- O-15 Persistence of Fermionic Spin Excitations through a Genuine Mott Transition in κ -Type Organics
S. Imajo, N. Kato, R. J. Marckwardt, E. Yesil, H. Akutsu, and Y. Nakazawa
Phys. Rev. B **105**(12), 125130 (2022) (7 pages).
- O-16 Systematic Study on Thermal Conductivity of Organic Triangular Lattice Systems β' -X[Pd(dmit)₂]₂
T. Nomoto, S. Yamashita, H. Akutsu, Y. Nakazawa, and R. Kato
Phys. Rev. B **105**(24), 245133 (2022) (7 pages).
- O-17 *Cis-Trans* Reisomerization Precedes Reprotonation of the Retinal Chromophore in the Photocycle of Schizorhodopsin 4
K. Hayashi, M. Mizuno, H. Kandori, and Y. Mizutani
Angew. Chem. Int. Ed. **61**(33), e202203149 (2022) (5 pages).
- O-18 High Suitability of Tryptophan Residues as a Spectroscopic Thermometer for Local Temperature in Proteins under Nonequilibrium Conditions
S. Yamashita, M. Mizuno, and Y. Mizutani
J. Chem. Phys. **156**(7), 075101 (2022) (8 pages).
- O-19 Time-resolved Spectroscopic Mapping of Vibrational Energy Flow in Proteins: Understanding Thermal Diffusion at the Nanoscale
Y. Mizutani and M. Mizuno
J. Chem. Phys. (2022) in press.
- O-20 Dependence of Vibrational Energy Transfer on Distance in a Four-Helix Bundle Protein: Equidistant Increments with the Periodicity of α Helices
S. Yamashita, M. Mizuno, K. Takemura, A. Kitao, and Y. Mizutani
J. Phys. Chem. B **126**(17), 3283–3290 (2022).
- O-21 Contact-Mediated Retinal-Opsin Coupling Enables Proton Pumping in Gloeobacter Rhodopsin
T. Shionoya, M. Mizuno, H. Kandori, and Y. Mizutani
J. Phys. Chem. B **126**(40), 7857–7869 (2022).

- O-22 Origin of a Double Band Feature in the Ethylenic C=C Stretching Modes of the Retinal Chromophore in Heliorhodopsins
T. Urui, I. Das, M. Mizuno, M. Sheves, and Y. Mizutani
J. Phys. Chem. B **126**(43), 8680–8688 (2022).
- O-23 Control of Photoinduced Electron Transfer Using Complex Formation of Water-Soluble Porphyrin and Polyvinylpyrrolidone
Y. Cao, T. Takasaki, S. Yamashita, Y. Mizutani, A. Harada, and H. Yamaguchi
Polymers **14**(6), 1191 (2022) (9 pages).
- O-24 Kinetics of Denaturation and Renaturation Processes of Double-Stranded Helical Polysaccharide, Xanthan in Aqueous Sodium Chloride
Y. Tomofuji, K. Matsuo, and K. Terao
Carbohydr. Polym. **275**, 118681 (2022) (9 pages).
- O-25 Molecular Structure and Chiral Recognition Ability of Highly Branched Cyclic Dextrin Carbamate Derivative
A. Kishimoto, M. Mizuguchi, A. Ryoki, and K. Terao
Carbohydr. Polym. **290**, 119491 (2022) (7 pages).
- O-26 Magnetic Relaxation and Modification of Thiol Groups on Co-Mg Ferrite Nanoparticles for Theranostics
H. Katayanagi, N. Sakai, S. Hamada, A. Usui, K. Aoki, K. Kodama, K. Nashimoto, Y. Hosokai, and Y. Ichiyanagi
ChemNanoMat **8**(10), e202200014 (2022) (6 pages).
- O-27 Nanoarchitectonics of PEG-Coated Ni-Zn Ferrite Nanoparticles and Mechanical Analysis of Heat Generation by Magnetic Relaxation
K. Kodama, S. Hamada, K. Nashimoto, K. Aoki, K. Ohara, K. Nakazawa, and Y. Ichiyanagi
J. Inorg. Organomet. Polym. Mater. **32**(9), 3292–3300 (2022).
- O-28 AC Magnetic Susceptibility and Heat Dissipation of Zn-Doped Mg-Ferrite Nanoparticles
S. Hamada, K. Aoki, K. Kodama, K. Nashimoto, and Y. Ichiyanagi
J. Magn. Magn. Mater. **559**, 169536 (2022) (8 pages).
- R-1 Micellar Structure of Hydrophobically Modified Polysaccharides in Aqueous Solution
T. Sato, J. Yang, and K. Terao
Polym. J. **54**(4), 403–412 (2022).

B-1* 新基礎化学実験法 2022

宮崎裕司(大阪大学化学教育研究会編, 執筆分担) A5, 144 頁
学術図書出版社(2022 年 2 月 20 日発行).

B-2 FTIR and Raman Spectroscopy of Rhodopsins

H. Kandori and Y. Mizutani

In *Rhodopsin: Methods and Protocols*, V. Gordeliy Ed., Springer, pp. 207–228 (2022).

M-1* 電荷ガラス状態を形成する分子性化合物の熱輸送特性

野本哲也, 山下智史, 坪 広樹, 中澤康浩

大阪大学低温センター研究報告書(令和 2 年度)21–25 (2022).

M-2* 巻頭言 コロナ禍から未来にむけて

中澤康浩

熱測定 **49**(1), 1 (2022).