

テラヘルツイメージング研究チーム / Terahertz Sensing and Imaging Research Team

(1) 原著論文 (accept) を含む / Original Papers

1. S. Yamazaki, Y. Ueno, R. Hosoki, T. Saito, T. Idehara, Y. Yamaguchi, C. Otani, Y. Ogawa, M. Harata and H. Hoshina: "THz irradiation inhibits cell division by affecting actin dynamics", JCI Inhibit, submitted, (2021).
2. H. Hoshina, S. Yamazaki, M. Tsubouchi and M. Harata: "Terahertz irradiation effects on the morphology and dynamics of actin biopolymer", J. Phys., submitted, (2020).
3. K. Lee, R. T. Génova-Santos, M. Hazumi, S. Honda, H. Kutsuma, S. Oguri, C. Otani, M. W. Peel, J. Suzuki, O. Tajima and E. Won: "A forecast of the sensitivity on the measurement of the optical depth to reionization with the GroundBIRD experiment", Astrophys. J. submitted, (2021).
4. H. Momiyama, Y. Sasaki, I. Yoshimine, S. Nagano, T. Yuasa and C. Otani: "Depth super-resolved imaging of infrastructures defects using a terahertz-wave interferometer", NDT&E International, 120, 102431, (2021).
5. M. Yamashita and C. Otani: "Intrinsic and extrinsic effects on intraband optical conductivity of hot carriers in photoexcited graphene", Physical Review Research, 3, 013150, (2021).
6. T. Noguchi, S. Mima and C. Otani: "Contribution of residual quasiparticles to the characteristics of superconducting thin-film, resonators", IEEE Trans. Appl. Supercond. vol. 31, 2400205, (2021).
7. R. Smith, M. Ohno, Y. Mitsuya, Y. Miura, H. Takahashi, T. Kikuchi, S. Kohjiro, C. Otani and S. Ikuine: "Optimization for device structure of superconducting transition edge sensor coupled with heavy metal absorber", IEEE Trans. Appl. Supercond. vol. 31, pp. 1-4, (2021).
8. Y. Yamamoto, H. Hoshina and H. Sato: "Differences in intermolecular interactions and flexibility between poly(ethylene terephthalate) and poly(butylene terephthalate) studied by far-infrared/terahertz and low-frequency Raman spectroscopy", Macromolecules, 54, 1052-1062, (2021).
9. T. Notake, T. Iyoda, T. Arikawa, K. Tanaka, C. Otani and H. Minamide: "Frequency-decomposed bidirectional re-emissions from a single metal micro-helix dynamically visualized in terahertz electromagnetic region", Scientific Reports, 11, 3310, (2021).
10. M. Imashimizu, M. Tanaka and H. Hoshina: "Gre factors prevent thermal and mechanical stresses induced by terahertz irradiation during transcription", Genes to Cells, 26, 56-64, (2021).

11. [Review] C. H. Feng and C. Otani: "Terahertz Spectroscopy Technology as an Innovative Technique for Food: Current State-of-the-Art Research Advances", *Critical Reviews in Food Science and Nutrition*, published online, (2020).
12. [Review] J. F. García-Martín, M. Cuevas, C. H. Feng, P. Alvarez-Mateos, M. Torres-García and S. Sánchez: "Energetic Valorisation of Olive Biomass: Olive-Tree Pruning, Olive Stones and Pomaces", *Processes*, 8, 511, (2020).
13. C. H. Feng, J. F. García-Martín, M. B. Lavado, M. C. López-Barrera and P. Álvarez-Mateos: "Evaluation of different solvents on flavonoids extraction efficiency from sweet oranges and ripe and immature Seville oranges", *International Journal of Food Science and Technology*, 55, 3123–3134, (2020).
14. C. H. Feng, Y. Makino and J. F. García-Martín: "Hyperspectral imaging coupled with multivariate analysis and image processing for detection and visualisation of colour in cooked sausages stuffed with different modified casings", *Foods*, 9, 1089, (2020).
15. S. Yamazaki, M. Harata, Y. Ueno, M. Tsubouchi, K. Konagaya, Y. Ogawa, G. Isoyama, C. Otani, and H. Hoshina: "Propagation of THz irradiation energy through aqueous layers: Demolition of actin filaments in living cells", *Scientific Reports*, 10, 9008, (2020).
16. S. Yamazaki, C. Gerhold, K. Yamamoto, Y. Ueno, R. Grosse, K. Miyamoto and M. Harata: "The Actin-Family Protein Arp4 Is a Novel Suppressor for the Formation and Functions of Nuclear F-Actin", *Cells*, 9, 758, (2020).
17. H. Kutsuma, Y. Sueno, M. Hattori, S. Mima, S. Oguri, C. Otani, J. Suzuki and O. Tajima: "A method to measure superconducting transition temperature of microwave kinetic inductance detector by changing power of readout microwaves", *AIP Advances*, 10, 095320, (2020).
18. H. Momiyama, Y. Sasaki, I. Yoshimine, S. Nagano, T. Yuasa and C. Otani: "Improvement of the depth resolution of swept-source THz- OCT for non-destructive inspection", *Optics Express*, 28, 12279, (2020).
19. M. Tsubouchi, H. Hoshina, M. Nagai and G. Isoyama: "Plane photoacoustic wave generation in liquid water using irradiation of terahertz pulses", *Scientific Reports*, 10, 18537, (2020).
20. S. Yamazaki, M. Harata, Y. Ueno, M. Tsubouchi, K. Konagaya, Y. Ogawa, G. Isoyama, C. Otani and H. Hoshina: "Propagation of THz irradiation energy through aqueous layers: Demolition of actin filaments in living cells", *Scientific Reports*, 10, 9008, (2020).
21. K. Matsumoto, I. Yoshimine, K. Himeno, T. Shimura and T. Satoh: "Observation of evanescent spin waves in the magnetic dipole regime", *Physical Review B*, 101, 184407, (2020). D. Marlina, Y. Park, H. Hoshina, Y. Ozaki, Y. M. Jung and H. Sato: "A study on blend ratio-dependent far-IR and low-frequency Raman spectra and WAXD patterns of poly(3-hydroxybutyrate)/poly(4-vinylphenol) using homospectral and heterospectral two-dimensional correlation spectroscopy", *Analytical Sciences*, 36, 731, (2020).

22. H. Hoshina, Y. Saito, T. Furuhashi, T. Shimazaki, M. Sawada, Y. Hioki and C. Otani: “Terahertz Spectroscopy for Characterization of Hydrogen Bonding and Cross-linked Structure Dynamics in Polyurethane”, *J. Infra. Milli. TeraHz. Waves*, 41, 265-275, (2020).
23. H. Hoshina, T. Kanemura and M. T. Ruggiero: “Exploring the Dynamics of Bound Water in Nylon Polymers with Terahertz Spectroscopy”, *J. Phys. Chem. B*, 124, 422-429, (2020).
24. K. Lee, J. Choi, R. T. Génova Santos, M. Hattori, M. Hazumi, S. Honda, T. Ikemitsu, H. Ishida, H. Ishitsuka, Y. Jo, K. Karatsu, K. Kiuchi, J. Komine, R. Koyano, H. Kutsuma, S. Mima, M. Minowa, J. Moon, M. Nagai, T. Nagasaki, M. Naruse, S. Oguri, C. Otani, M. Peel, R. Rebolo, J. A. Rubiño Martín, Y. Sekimoto, J. Suzuki, T. Taino, O. Tajima, N. Tomita, T. Uchida, E. Won and M. Yoshida: “GroundBIRD: A CMB Polarization Experiment with MKID Arrays”, *J. Low Temp. Phys.* 200, 384–391, (2020).
25. R. Smith, M. Ohno, Y. Miura, N. Nakada, Y. Mitsuya, H. Takahashi, T. Ikeda, C. Otani, M. Sakama, N. Matsufuji, T. Irimatsugawa, S. Kohjiro, H. Yamamori and F. Hirayama: “Microcalorimetry of carbon ion beam for medical treatment by transition edge sensor”, *J. Low Temp. Phys.* 199, 1012-1017, (2020).
26. M. Naruse, T. Ando, Y. Waga, R. Kubota, S. Mima, C. Otani, T. Taino and H. Myoren: “Superconducting resonators with niobium and YBa₂Cu₃O_{7-d} for Alpha-particle detectors”, *J. Low Temp. Phys.* 199, 614-621, (2020).
27. Y. Minami, Y. Akiba, S. Beckman, M. Hazumi, C. Kuo, N. A. Kurinsky, H. Kutsuma, A. T. Lee, S. Mima, C. R. Raum, T. Sasse, S. L. Stever, A. Suzuki and B. Westbrook: “Irradiation Tests of Superconducting Detectors and Comparison with Simulations”, *J. Low Temp. Phys.* 199, 118–129, (2020).
28. Y. Minami, Y. Akiba, S. Beckman, M. Hazumi, C. Kuo, N. A. Kurinsky, H. Kutsuma, A. T. Lee, S. Mima, C. R. Raum, T. Sasse, S. L. Stever, A. Suzuki and B. Westbrook: “Irradiation Tests of Superconducting Detectors and Comparison with Simulations”, *J. Low Temp. Phys.* 199, 118–129, (2020).

(2) 招待講演 / Invited Talks

1. C. Otani, Y. Sasaki, “Development of terahertz radar imaging technology and systems”, 2020 IEEE International Symposium on Radio-Frequency Integration Technology (RFIT 2020), Hiroshima, Japan, September 3, (2020).
2. 大谷知行, “テラヘルツ応用と概観と展望”, 第12回テラヘルツビジネスセミナー (12th THz-biz), 展示会 All About Photonics, 東京, 12月9日, (2020).
3. 保科宏道, 竹内恒, “THz-NMRによる生体と電磁波の相互作用の解明: 未来型「電磁波医療」を目指して”, 21世紀イノベーションリーダーワークショップ, オンライン, 12月2日, (2020).

4. 山崎祥他 , “ テラヘルツ光による生体高分子の構造操作 ”, 令和 2 年度第 3 回名古屋産学官・医連携研究会 (名古屋連携研究会 : NJK) , Online, 12 月 2 日 , (2020).
5. C. Feng, “Recent advances in non-invasively evaluating the quality of foodstuffs by using hyperspectral imaging and terahertz spectroscopy”, 理研 Discovery Afternoon, Online, 11 月 27 日 , (2020).
6. 大谷知行 , “Beyond 5G/6G の動向とテラヘルツ応用 ”, 第 5 回マイクロコイル研究会 , 川崎 , 11 月 25 日 , (2020).
7. 大谷知行 , “ テラヘルツ波の基礎とセンシング・イメージング応用 ”, 情報機構セミナー , オンライン , 11 月 24 日 , (2020).
8. 山崎祥他 , “THz 光の周波数帯特性を利用した細胞機能制御 ”, テラヘルツ科学の最先端 VII, Online, 11 月 20 日 , (2020).
9. 山崎祥他 , “ テラヘルツ光を利用した細胞内タンパク質構造体の操作 ”, 光・量子ビーム科学合同シンポジウム 2020, オンライン , 9 月 29 日 , (2020).
10. 保科宏道 , “ テラヘルツ分光で見る高分子と吸着水のダイナミクス ”, 第 69 回高分子討論会 , オンライン , 9 月 17 日 , (2020).

(3) 会議、シンポジウム、セミナー主催 / Meeting, Symposiums and Seminars

1. [セミナー主催] 第 12 回テラヘルツビジネスセミナー (12th THz-Biz), 展示会「All About Photonics - InterOpto 2021」, 東京 , 12 月 9 日 , (2020).
2. [展示会出展] 大谷知行 , 佐々木芳彰 , 碓 智文 , “ ~ JST-ACCEL プログラム ~ 300 GHz 帯テラヘルツウォークスルーボディースキャナーの研究開発 ”, 第 12 回テラヘルツビジネスセミナー (12th THz-biz), 展示会「All About Photonics - InterOpto 2021」, 東京 , 12 月 9-11 日 , (2020).

(4) 特許出願 / Patent Applications

1. 保科宏道 , 山崎祥他 , 小川雄一 , 大谷知行 , “ 生体高分子操作装置および生体高分子操作方法 ”, 特願 2020-188243, 2020 年 11 月 11 日

(5) 特筆すべき事項・トピックス (雑誌表紙などの掲載記事) / Topics

1. 日刊工業新聞朝刊 19 面 , “ テラヘルツ波送受信 ~ 理研など微生物で微小アンテナ ~ ”, 2021 年 2 月 9 日
2. Laser Focus World JAPAN, World News, “ テラヘルツ光照射による細胞内タンパク質重合体の断片化 ”, 2020 年度 11 月号 , pp. 8-9 (e.x.press 社)
3. RIKEN Research, Fall 2020, p. 24, Research Highlights, “Radiation hinders protein filaments from forming”, 2020
4. フジサンケイビジネスアイ , Science View “ テラヘルツ光照射による細胞内タン

パク質重合体の断片化 ”, 2020 年 7 月 16 日