

先端レーザー加工研究チーム / **Advanced Laser Processing Research Team**

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

1. Y. Hu, S. Rao, S. Wu, P. Wei, W. Qiu, D. Wu, B. Xu, J. Ni, L. Yang, J. Li, J. Chu, and K. Sugioka, "All-glass 3D optofluidic microchip with built-in tunable microlens fabricated by femtosecond laser-assisted etching", *Adv. Opt. Mater.* **6**, 1701299 (2018).
2. S. Bai, D. Serien, A. Hu, and K. Sugioka, "Three-dimensional microfluidic SERS chips fabricated by all-femtosecond-laser-processing for real-time sensing of toxic substances", *Adv. Func. Mater.* **28**, 1706262 (2018).
3. D. S. Zhang, W., Choi, J. Jakobi, M. R. Kalus, S. Barcikowski, S. H. Cho, and K. Sugioka, "Spontaneous shape alteration and size separation of surfactant-free silver particles synthesized by laser ablation in acetone during long-period storage", *Nanomaterials*, **8**, 529 (2018).
4. F. Jipa, S. Iosub, B. Calin, E. Axente, F. Sima, and Sugioka, "High repetition rate UV versus VIS picosecond laser fabrication of 3D microfluidic channels embedded in photosensitive glass", *Nanomaterials*, **8**, 583 (2018).
5. D. S. Zhang, W., Choi, Y. Oshima, U. Wiedwald, S. H. Cho, H. P. Lin, Y. K. Li, Y. Ito, and K. Sugioka, "Magnetic Fe@FeOx, Fe@C and alpha-Fe<sub>2</sub>O<sub>3</sub> single-crystal nanoblends synthesized by femtosecond laser ablation of Fe in acetone", *Nanomaterials*, **8**, 631 (2018).
6. D. S. Zhang, W., Choi, K. Yazawa, K. Numata, A. Tateishi, S. H. Cho, H. P. Lin, Y. K. Li, Y. Ito, and K. Sugioka, "Two Birds with One Stone: Spontaneous Size Separation and Growth Inhibition of Femtosecond Laser-Generated Surfactant-Free Metallic Nanoparticles via ex Situ SU-8 Functionalization", *ACS OMEGA*, **3**, 10953-10966 (2018).
7. S. Nakashima, R. Okabe, K. Sugioka, and A. Ishida, "Fabrication of magneto-optical waveguides inside transparent silica xerogels containing ferrimagnetic Fe<sub>3</sub>O<sub>4</sub> nanoparticles", *Opt. Express* **26**, 31898-31907 (2018).
8. F. Sima, H. Kawano, A. Miyawaki, L. Kelemen, P. Ormos, D. Wu, J. Xu, K. Midorikawa, and K. Sugioka, "3D biomimetic chips for cancer cell migration in nanometer-sized spaces using ship-in-a-bottle femtosecond laser processing", *ACS Appl. Bio Mater.* **1**, 1667-1676 (2018).
9. D. S. Zhang and K. Sugioka, "Hierarchical microstructures with high spatial frequency laser induced periodic surface structures (HSFLs) possessing different orientations created by femtosecond laser ablation of silicon in liquids", *Opto-Electron. Adv.* **2**, 190002 (2019).
10. D. Wu, C. Wang, L. Yang, C. Zhang, S. Rao, Y. Wang, S. Wu, J. Li, Y. Hu, J. Chu, and Koji Sugioka, "Multi-layered skyscraper microchips fabricated by hybrid "all-in-one"

femtosecond laser processing", *Microsystems Nanoengin.* 5, 17 (2019).

(2) 著書・解説など / Book Editions, Review Papers

1. F. Sima, K. Sugioka, R. Martínez Vázquez, R. Osellame, L. Kelemen, and P. Ormos, "Three-dimensional femtosecond laser processing for lab-on-a-chip applications", *Nanophotonics* 7, 613-634 (2018).
2. D. Serien and K. Sugioka, "Fabrication of three-dimensional proteinaceous micro- and nano-structures by femtosecond laser cross-linking", *Opto-Electron. Adv.* 1, 180008 (2018).
3. M. K. Bhuyan and K. Sugioka, "Ultrafast laser micro and nano processing of transparent materials - From fundamentals to applications", P. Ossi (Ed.), *Advances in the Application of Lasers in Materials Science*, (Springer, Berlin) p. 149 -190 (2018).
4. K. Sugioka, T. Matsuda, and Y. Ito, "Photofabrication", Y. Ito (Ed.), *Photochemistry for Biomedical Applications*, (Springer, Berlin) p. 51 -82 (2018).
5. K. Sugioka, "Hybrid femtosecond laser three-dimensional micro-and nanoprocessing: a review", *Int. J. Extrem. Manuf.* 1, 012003 (2019).
6. 杉岡幸次, "フェムト秒レーザーによる3次元加工とそのバイオ応用", *レーザー協会誌*, 42(3), 1-6 (2018).
7. 杉岡幸次, "2.7 レーザ加工分野の市場動向: 2.7.1 はじめに", 平成29年度光産業技術に関する報告書 ((財) 光産業技術振興協会編) p.175-180 (2018).
8. 杉岡幸次, "2.7 レーザ加工分野の市場動向: 2.7.3 おわりに", 平成29年度光産業技術に関する報告書 ((財) 光産業技術振興協会編) p.212-213 (2018).
9. 杉岡幸次, "整形フェムト秒ベッセルビーム加工 - 高アスペクト比シリコン貫通穴の作製 -", *レーザー加工学会誌*, 25, 33-35 (2018).
10. 杉岡幸次, "ビームマニピュレーションによる超短パルスレーザープロセッシング", *プラズマ・核融合学会誌*, 94, 248-3252 (2018).

(3) 招待講演 / Invited Talks

1. Koji Sugioka, Felix Sima, Jian Xu, Daniela Serien, "Hybrid femtosecond laser processing for fabrication of functional 3D micro/nano-devices", 1st Int. Workshop on Frontiers in Lasers and Applications (FLA-2018), Ishigaki, Japan, April (2018). Keynote Talk
2. K. Sugioka, S. Bai, and A. Hu, "3D microfluidic SERS chips fabricated by all-femtosecond-laser-processing", 6th Int. Academy of Photon. and Laser Engin. (IAPLE) Conference, Cape Town, South Africa, Aug. (2018). Keynote Talk
3. Koji Sugioka, "Femtosecond laser 3D processing for fabrication of functional micro- and nano-systems" Int. Surfaces, Coating & Interface Conf. (SurfCoat Korea 2019), Incheon, Korea, March (2019). Keynote Talk

4. K. Sugioka, "Ultrafast laser 3D micro and nano processing", 6th Int. School on Lasers in Materials Science (SLIMS 2018), Venice, Italy, July (2018). Tutorial Talk
5. K. Sugioka, "3D biomimetic nanochips for cancer cell migration study fabricated by "ship-in-a-bottle" femtosecond laser processing", The 9th Shanghai-Tokyo Advanced Research Symposium on Ultrafast Intense Laser Science (STAR9), Nasu, Japan, May (2018).
6. D. S. Zhang and K. Sugioka, "Diversity of nanomaterials synthesized by femtosecond laser ablation in liquids", The 9th Shanghai-Tokyo Advanced Research Symposium on Ultrafast Intense Laser Science (STAR9), Nasu, Japan, May (2018).
7. K. Sugioka, S. Bai, and A. Hu, "3D microfluidic SERS chips fabricated by all-femtosecond-laser-processing", 26th Int. Conf. on Advanced Laser Technology (ALT' 18), Tarragona, Spain, Sept. (2018).
8. K. Sugioka, F. Sima, D. Serien, and K. Midorikawa, "Hybrid subtractive and additive femtosecond laser 3D processing", SPIE Int. Conf. on Advanced Manufacturing Technologies for Micro- and Nanosystems in Security and Defence, Berlin, Germany, Sept. (2018).
9. K. Sugioka and D. Serien, "Femtosecond laser 3D printing of proteinaceous micro and nanostructures", 5th Int. Symp. on Laser Interaction with matter (LIMIS 2018), Changsha, China, Nov. (2018).
10. K. Sugioka, S. Bai, and A. Hu, "Microfluidic chips integrated with a 2D metal nanodot array by all-femtosecond-laser-processing for highly sensitive SERS sensing", 27th Int. Cong. on Applications of Lasers & Electro-Optics (ICALEO 2018), Orlando, USA, Oct. (2018).
11. K. Sugioka, F. Sima, D. Serien, and S. Bai, "Femtosecond laser 3D micro/nanofabrication for biochip and sensor applications", Int. Symp. on SSS Laser Processing (3S-LP), Yokohama, Japan, Feb.-March (2019).
12. 杉岡幸次, "フェムト秒レーザー3次元加工とマイクロ・ナノデバイス作製への応用", 大阪大学接合科学研究所特別講演会、3月、茨城 (2019) . 特別公演
13. 杉岡幸次, "フェムト秒レーザーによる3次元マイクロ・ナノ加工と機能デバイス作製への応用", 大阪市立大学セミナー、5月、大阪 (2018) .
14. 杉岡幸次, "フェムト秒レーザーによる3次元マイクロ・ナノ加工と機能デバイス作製への応用", レーザー学会九州支部セミナー、8月、福岡 (2018) .
15. 杉岡幸次, "フェムト秒レーザー3次元加工によるバイオ・センシングチップの開発", 第62回光波センシング技術研究会講演会 2018、12月、東京 (2018) .
16. 杉岡幸次, "レーザーが創る小さな3次元の世界", 和光市民大学、12月、和光 (2018) .
17. 杉岡幸次, "フェムト秒レーザー3次元加工によるマイクロ流体 SERS チップの開発", 光産業技術振興協会平成30年度第5回多元技術融合光プロセ

ス研究会、3月、東京 (2019).

18. D. Serien, M. Abe, M. Terakawa, H. Kawano, A. Miyawaki, K. Midorikawa, and K. Sugioka, “Three-dimensional proteinaceous microstructure fabrication by photoactivator-free femtosecond laser cross-linking” レーザー学会学術講演会第39回年次大会、1月、東京 (2018).

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

1. 1st Int. workshop on Frontiers in Lasers and Applications (FLA-2018), Ishigaki, Japan, April (2018).
2. 19th Int. Sym. on Laser Precision Microfabrication (LPM 2018), Edinburgh, UK, June (2018).
3. SPIE Photonics West LASE 2019, San Francisco, USA, Feb. (2019).
4. 先端レーザー加工セミナー, Henry Helvajian, “Laser ultrasonic mediated crystalline phase formation in a thin film”, 和光, 4月20日, (2018).
5. 先端レーザー加工セミナー, Yves Bellouard, “Femtosecond laser three-dimensional exposure of silica substrate in the non-ablative regime: from laser-induced modifications to applications”, 和光, 9月3日, (2018).
6. 先端レーザー加工セミナー, Shlomo Ruschin, “Unbalanced interferometric waveguided sensors”, 和光, 10月24日, (2018).

(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. 杉岡幸次チームリーダーが、ハンガリー・セゲッド大学より名誉博士号の学位を授与される。

Team Leader, Koji Sugioka, was awarded Doctor Honoris Causa from University of Szeged, Hungary.