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### Araştırma Alanları

Malzeme Bilimi, Metroloji, ölçüm ve laboratuvar teknikleri, Optik özellikler, Yoğun madde spektroskopisi

### Yönetilen Tezler

PAVLOV I., 3D-microstructuring of silicon induced by nanosecond pulsed infrared fiber laser for potential solar cell applications, Yüksek Lisans, B.BÜLBÜL (Öğrenci), 2022

### SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

- I. **Single-beam low-frequency loss modulation technique for two-photon absorption measurement**  
Kadan V., PAVLOV I., Dmytruk A., Blonskyi I., Pavlova T., Serozhkin Y., Goodarzi A., Bondar M.  
Optics Communications, cilt.569, 2024 (SCI-Expanded)
- II. **Development of a selective wet-chemical etchant for precise 3D sculpting of silicon enabled by infrared non-linear laser modification**  
Zolfaghari Borra M., Radfar B., Nasser H., Çolakoğlu T., Tokel O., Turnalı A., DEMİRTAŞ M., Işık Taşgın D., TOFFOLİ H., Toffoli D., et al.  
Optics and Laser Technology, cilt.176, 2024 (SCI-Expanded)
- III. **Electrical Properties of Laser Patterned Schottky Diode with ALD-Grown TiO<sub>2</sub> Interlayer**  
Dikicioğlu E., Balı M. B., SAĞLAM S., Berberoğlu H., PAVLOV I., GOODARZİ A., ORHAN E.  
ACS Omega, cilt.9, sa.19, ss.21346-21352, 2024 (SCI-Expanded)
- IV. **LIPSS for SERS: Metal Coated Direct Laser Written Periodic Nanostructures for Surface Enhanced Raman Spectroscopy**  
Erkizan S. N., İDİKUT F., Demirtas O., Goodarzi A., Demir A. K., Borra M., PAVLOV I., BEK A.  
ADVANCED OPTICAL MATERIALS, cilt.10, sa.22, 2022 (SCI-Expanded)
- V. **Time-resolved microscopy of femtosecond laser filaments in fused quartz**  
Kadan V., Blonskyi I., Pavlov I.  
OPTICS COMMUNICATIONS, cilt.505, 2022 (SCI-Expanded)
- VI. **Azimuthal and polar anchoring energies of aligning layers structured by nonlinear laser lithography**  
Pavlov I., Candemir O., Rybak A., Dobrovolskiy A., Kadan V., Blonskiy I., Lytvyn P., Korchovyı A., Tytarenko P.,

Kazantseva Z., et al.

Liquid Crystals, cilt.48, sa.1, ss.131-149, 2021 (SCI-Expanded)

VII. **3D-graphene-laser patterned p-type silicon Schottky diode**

Orhan E. O., Efil E., Bayram O., Kaymak N., Berberoğlu H., Candemir O., PAVLOV I., Ocak S. B.

Materials Science in Semiconductor Processing, cilt.121, 2021 (SCI-Expanded)

VIII. **High power microsecond fiber laser at 1.5  $\mu\text{m}$**

Pavlova S., Yagci M. E., Eken S. K., Tunckol E., Pavlov I.

Optics Express, cilt.28, sa.12, ss.18368-18375, 2020 (SCI-Expanded)

IX. **Upconversion fluorescence assisted visualization of femtosecond laser filaments in Er-doped chalcogenide  $65\text{GeS}(2)-25\text{Ga}(2)\text{S}(3)-10\text{CsCl}$  glass**

Blonskiy I., Kadan V., Shpotyuk O., Calvez L., Pavlov I., Pavlova S., Dmytruk A., Rybak A., Korenyuk P.

OPTICS AND LASER TECHNOLOGY, cilt.119, 2019 (SCI-Expanded)

X. **Generation of 2- $\mu\text{J}$  410-fs pulses from a single-mode chirped-pulse fiber laser operating at 1550 nm**

Pavlova S., Rezaei H., Pavlov I., Kalaycioglu H., Ilday F. O.

APPLIED PHYSICS B-LASERS AND OPTICS, cilt.124, sa.10, 2018 (SCI-Expanded)

XI. **High-quality alignment of nematic liquid crystals using periodic nanostructures created by nonlinear laser lithography**

Pavlov I., Rybak A. S., Dobrovolskiy A. M., Kadan V. M., Blonskiy I. V., Kazantseva Z. I., Gvozдовskyy I. A.

JOURNAL OF MOLECULAR LIQUIDS, cilt.267, ss.212-221, 2018 (SCI-Expanded)

XII. **Spatio-temporal dynamics of femtosecond laser pulses at 1550 nm wavelength in crystal silicon**

Kadan V., Pavlova S., Pavlov I., Rezaei H., Ilday O., Blonskiy I.

APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING, cilt.124, sa.8, 2018 (SCI-Expanded)

XIII. **NLL-Assisted Multilayer Graphene Patterning**

Kovalska E., Pavlov I., Deminskyi P., Baldycheva A., Ilday F. O., Kocabas C.

ACS OMEGA, cilt.3, sa.2, ss.1546-1554, 2018 (SCI-Expanded)

XIV. **The alignment of nematic liquid crystal by the Ti layer processed by nonlinear laser lithography**

Pavlov I., Rybak A., Dobrovolskiy A., Kadan V., Blonskiy I., Ilday F. O., Kazantseva Z., Gvozдовskyy I.

LIQUID CRYSTALS, cilt.45, sa.9, ss.1265-1271, 2018 (SCI-Expanded)

XV. **In-chip microstructures and photonic devices fabricated by nonlinear laser lithography deep inside silicon**

Tokel O., Turnali A., Makey G., Elahi P., Colakoglu T., Ergecen E., Yavuz O., Hubner R., Borra M. Z., Pavlov I., et al.

NATURE PHOTONICS, cilt.11, ss.639-646, 2017 (SCI-Expanded)

XVI. **Femtosecond laser written waveguides deep inside silicon**

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OPTICS LETTERS, cilt.42, sa.15, ss.3028-3031, 2017 (SCI-Expanded)

XVII. **Rich complex behaviour of self-assembled nanoparticles far from equilibrium**

Ilday S., Makey G., Akguc G. B., Yavuz O. N., Tokel O., Pavlov I., Gulseren O., Ilday F. O.

NATURE COMMUNICATIONS, cilt.8, 2017 (SCI-Expanded)

XVIII. **Nano patterning of AISI 316L stainless steel with Nonlinear Laser Lithography: Sliding under dry and oil-lubricated conditions**

Gnilitskiy I., Rotundo F., Martini C., Pavlov I., Ilday S., Vovk E., Ilday F. O., Orazi L.

TRIBOLOGY INTERNATIONAL, cilt.99, ss.67-76, 2016 (SCI-Expanded)

XIX. **Nonlinear laser lithography to control surface properties of stainless steel**

Orazi L., Gnilitskiy I., Pavlov I., Serro A. P., Ilday S., Ilday F. O.

CIRP ANNALS-MANUFACTURING TECHNOLOGY, cilt.64, sa.1, ss.193-196, 2015 (SCI-Expanded)

XX. **Diffraction-limited, 10-W, 5-ns, 100-kHz, all-fiber laser at 1.55  $\mu\text{m}$**

Pavlov I., Dulgergil E., Ilbey E., Ilday F. O.

OPTICS LETTERS, cilt.39, sa.9, ss.2695-2698, 2014 (SCI-Expanded)

XXI. **Nonlinear laser lithography for indefinitely large-area nanostructuring with femtosecond pulses**

Oktem B., Pavlov I., Ilday S., Kalaycioglu H., Rybak A., Yavas S., Erdogan M., İLDAY F. Ö.

NATURE PHOTONICS, cilt.7, sa.11, ss.897-901, 2013 (SCI-Expanded)

XXII. **High-power high-repetition-rate single-mode Er-Yb-doped fiber laser system**

Pavlov I., Ilbey E., Dulgergil E., Bayri A., İLDAY F. Ö.

OPTICS EXPRESS, cilt.20, sa.9, 2012 (SCI-Expanded)

XXIII. **Femtosecond filamentation in chalcogenide glasses limited by two-photon absorption**

Blonskyi I., Kadan V., Shpotyuk O., Iovu M., Pavlov I.

OPTICAL MATERIALS, cilt.32, sa.11, ss.1553-1557, 2010 (SCI-Expanded)

## **Diğer Dergilerde Yayınlanan Makaleler**

I. **ULTRASHORT LIGHT PULSES IN TRANSPARENT SOLIDS: PROPAGATION PECULIARITIES AND PRACTICAL APPLICATIONS**

Blonskyi I., Kadan V. M., Pavlova S., Pavlov I., Shpotyuk O., Khasanov O. K.

UKRAINIAN JOURNAL OF PHYSICS, cilt.64, sa.6, ss.457-463, 2019 (ESCI)

## **Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar**

I. **Low ASE Er-Yb Laser with Single Amplification Stage**

Sungur E. İ., PAVLOV I.

Fiber Lasers XX: Technology and Systems 2023, California, Amerika Birleşik Devletleri, 30 Ocak - 02 Şubat 2023, cilt.12400

II. **Nanosecond Laser-Induced Micro-Modifications in Bulk of Crystal Silicon**

Kadan V., Pavlova S., Bek A., Aydin Y., Blonskyi I., Pavlov I.

2023 Conference on Lasers and Electro-Optics Europe and European Quantum Electronics Conference, CLEO/Europe-EQEC 2023, Munich, Almanya, 26 - 30 Haziran 2023

III. **Laser Induced Periodic Surface Structured c-Si Solar Cell with more than 16% efficiency**

GOODARZİ A., Candemir O., Nasser H., Borra M. Z., Genc E., ÇİFTPİNAR E. H., BEK A., TURAN R., PAVLOV I.

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IV. **Laser induced periodic surface structured c-Si solar cell with more than 16% efficiency**

Goodarzi A., Candemir O., Nasser H., Borra M. Z., Genc E., ÇİFTPİNAR E. H., BEK A., TURAN R., PAVLOV I.

2021 European Conference on Lasers and Electro-Optics, CLEO/Europe 2021, Virtual, Online, Almanya, 21 - 25 Haziran 2021

V. **Laser induced periodic surface structured c-Si solar cell with more than 16% efficiency**

GOODARZİ A., Candemir O., Nasser H., Borra M. Z., Genc E., ÇİFTPİNAR E. H., BEK A., TURAN R., PAVLOV I.

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VI. **The behaviour of neuro-2A cells on silicon substrates with various topographies generated by femtosecond laser micromachining**

Mingu S., PAVLOV I., SON Ç. D., BEK A.

7th International Conference on Bioimaging, BIOIMAGING 2020 - Part of 13th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2020, Valletta, Malta, 24 - 26 Şubat 2020, ss.192-199

VII. **Laser-induced periodic nano-patterning of solar cell surfaces for low-cost and low material loss fabrication of light management interfaces**

PAVLOV I., Çolakoğlu T., genç e., abak m. k., Nasser H., TURAN R., BEK A.

2019 Annual Nanotechnology Conference, 11 - 13 Eylül 2019

VIII. **Evaluation of Cell Response to Femtosecond-Laser Induced Substrate Topography**

Mingu S., İDİKUT F., PAVLOV I., SON Ç. D., BEK A.

21. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, İstanbul, Türkiye, 06 Eylül 2019

- IX. Liquid crystal alignment on the patterns produced by nonlinear laser lithography**  
PAVLOV I., Rybak A., Dobrovolskiy A., Kazantseva Z., BEK A., Candemir O., Gvozдовskyy I.  
2019 Conference on Lasers and Electro-Optics Europe and European Quantum Electronics Conference,  
CLEO/Europe-EQEC 2019, Munich, Almanya, 23 - 27 Haziran 2019
- X. Slicing Crystalline Silicon Wafer by Deep Subsurface Laser Processing and Selective Chemical Etching**  
zolfaghari borra m., Nasser H., ÇİFTPINAR E. H., turnalı a., deminsky p., Çolakoğlu T., TOKEL O., İLDAY F. Ö., PAVLOV I., TURAN R., et al.  
Conference on Lasers and Electro-Optics Europe / European Quantum Electronics Conference (CLEO/Europe-EQEC), Munich, Almanya, 23 - 27 Haziran 2019
- XI. Optical Waveguides Written Deep Inside Silicon by Femtosecond Laser**  
Pavlov I., TOKEL O., Pavlova S., Kadan V., Makey G., Turnali A., Colakoglu T., Yavuz O., İLDAY F. Ö.  
Conference on Lasers and Electro-Optics Europe / European Quantum Electronics Conference (CLEO/Europe-EQEC), Munich, Almanya, 25 - 29 Haziran 2017
- XII. Laser-slicing of silicon with 3D nonlinear laser lithography**  
TOKEL O., Turnali A., Colakoglu T., Ilday S., Borra M. Z., Pavlov I., BEK A., TURAN R., İLDAY F. Ö.  
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- XIII. Laser Assisted Sculpting of Silicon**  
BEK A., çolakoğlu t., ihor p., zolfaghari borra m.  
Medinano-8 konferansı, 29 - 30 Haziran 2016
- XIV. Periodic Surface Texturing by Nonlinear LaserLithography for Enhanced Si Solar CellPerformance**  
pavlov I., çolakoğlu t., ES F., gnilitky i., İLDAY F. Ö., TURAN R., BEK A.  
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- XV. Nonlinear Laser Lithography for Photonic Texturing of Si Solar Cells**  
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## **Metrikler**

Yayın: 39

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Atf (Scopus): 706

H-İndeks (WoS): 11

H-İndeks (Scopus): 11