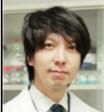


Public announcement of Collaborative Research, Phase 1

2023.05.25

Research Theme	Direct observation of the internal multiple-carrier dynamics of photo-switchable nanolasers	
Research Period	Jan. 1, 2021 - Dec. 31, 2022	
Researcher Information	Technion	 <p>Ido Kaminer Associate Professor Faculty of Electrical and Computer Engineering</p>
	Tokushima Univ.	 <p>Tetsuro Katayama Assistant Professor Institute of Post-LED Photonics</p>
Publication List (Published Papers, conference, presentations, etc)	<p>a) Joint outcomes:</p> <ul style="list-style-type: none"> · <i>J. Chem. Phys.</i> https://doi.org/10.1063/5.0101300, 2022 A. Furube, ...and T. Katayama · K. Wang, N. Rivera, R. Dahan, and I. Kaminer, "Ultrafast free-electron probing of photon statistics inside a laser cavity," in Conference on Lasers and Electro-Optics, Technical Digest Series (Optica Publishing Group, 2022), paper FTh5B.7. · T. Katayama, ...I. Kaminer, et al. "Observation of electronic spectra modulation in a CH₃NH₃PbBr₃ crystal by utilizing transient absorption microscopy " <i>Jpn. J. Appl. Phys.</i> 2023, 62 SG1030, DOI 10.35848/1347-4065/acbc29 · Phot-switchable nanolaser :the patent application number: 2022-19143 <p>b) Independent outcomes:</p> <p>Publication</p> <p><u>Technion : (Basic researches of UTEM in 2021-)</u></p> <p>Nature Physics 19, 551–561, 2023, "Light emission from strongly driven many-body systems" A. Pizzi, A. Gorlach, N. Rivera, A. Nunnenkamp, I. Kaminer</p> <p>Nature Materials 22, 345–352, 2023, "Tunable photon-induced spatial modulation of free electrons", S. Tsesses, R. Dahan, K. Wang, O. Reinhardt, G. Bartal, I. Kaminer</p> <p>ACS Nano 17, 3645–3656, 2023 "Ultrafast Electron Microscopy of Nanoscale Charge Dynamics in Semiconductors", M. Yannai, R. Dahan, A. Gorlach, Y. Adiv, K. Wang, I. Madan, S. Gargiulo, F. Barantani, E. J. C. Dias, G. M. Vanacore, N. Rivera, F. Carbone, F. J. García de Abajo, I. Kaminer</p> <p>npj Quantum Inf. 8, 510, 2022, "Free Electrons Can Induce Entanglement Between Photons", G. Baranes, R. Ruimy, A. Gorlach, I. Kaminer</p> <p>Phys. Rev. X 11, 041042, 2021, "Quantum nature of dielectric laser accelerators", Y. Adiv, K. Wang, R. Dahan, P. Broaddus, Y. Miao, D. Black, K. Leedle, R. L. Byer, O. Solgaard, J. England, I. Kaminer</p> <p><u>Tokushima Univ.: (Basic photochemical researches in 2021-2022)</u></p> <ul style="list-style-type: none"> · <i>Chemistry of Materials</i> 34 ,1315, 2022. " Polymorph-derived Diversification of Crystal Actuation by Photoisomerization and the Photothermal Effect" , Shodai Hasebe, <u>Tetsuro Katayama</u>, Hideko Koshima et al. · <i>Chemistry - An Asian Journal</i> -, "Effect of Phenolic Substituent Position in Boron Complexes of Imidazo[1,5-a]pyridine" in press: https://doi.org/10.1002/ajoc.202200040 · <i>Journal of the American Chemical Society</i>, 143, 8866, 2021. "Photothermally Driven High-Speed Crystal Actuation and Its Simulation" Shodai Hasebe, <u>Tetsuro Katayama</u>, Hideko Koshima et al. 	

Public announcement of Collaborative Research, Phase 1

- *RSC Advances*, 11, 26403, 2021. "Two-photon excitable boron complex based on tridentate imidazo[1,5-a]pyridine ligand for heavy-atom-free mitochondria-targeted photodynamic therapy", Keita Hoshi, Tetsuro Katayama, Fumitoshi Yagishita et al.
- *Journal of Photochemistry and Photobiology A: Chemistry*, 411, 113208, 2021. "Charge separation dynamics in In₂Se₃/ZnO/Au ternary system for enhanced photocatalytic degradation of methylene blue under visible light" Dhongade Siddhant, Tetsuro Katayama, Akihiro Furube et al.
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Conference

Technion : (Basic researches of UTEM)

- [1] K. Wang, I. Kaminer, "Ultrafast Electron Microscopy for Nanophotonics", PIERS, Hangzhou, China, December 2021.
- [2] I. Kaminer, "Extreme light-matter interactions in the ultrafast transmission electron microscope", M&M, Pittsburg, Pennsylvania, August 2021
- [3] I. Kaminer, "Does an electron wavefunction collapse when interacting with light?", ICFO-Weizmann Frontiers School, July 2021
- [4] I. Kaminer, "Extreme light-matter interactions in the ultrafast transmission electron microscope", Microscience Microscopy Congress (MMC), Manchester Central, England, July 2021
- [5] I. Kaminer, "Free-Electron Quantum Optics", CLEO, San Jose, California, May 2021
- [6] I. Kaminer PICO, "Extreme light-matter interactions in the ultrafast transmission electron microscope", Vaals, Netherlands, May 2021,

Tokushima Univ.: (Basic researches of lasing dynamics in perovskite materials)

- [1] 11th Asian Photochemistry Conference, (on line) Nov. 2021.P-04-23 "Polarization Dependence of Lasing Dynamics in a Lead Halide Perovskite Crystal Revealed by Femtosecond Transient Absorption Microscopy" Yuma Fujita, Yuichiro Akagi, Tetsuro Katayama, Akihiro Furube
- [2] The 82nd JSAP Autumn Meeting 2021, Sep. 2021. 12p-S201-5 "Charge Transfer Dynamics in Plasmon Materials and Perovskite Single Crystals" Akihiro Furube, Tetsuro Katayama
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