





## Public announcement of Collaborative Research, Phase 2

2025.04.16

Research Theme	Low dose high-resolution x-ray imaging using lanthanide activated photonic scintillators	
Research Period	Jan. 1, 2023 - Dec. 31, 2024	
Researcher Information	Technion	 <b>Yehonadav Bekenstein</b> Associate Professor Faculty of Materials Science and Engineering
	Tokushima Univ.	 <b>Toshihiro Moriga</b> Professor Graduate School of Technology, Industrial and Social Sciences, Division of Science and Technology
Publication List (Published Papers, conference, presentations, etc)	<ul style="list-style-type: none"> <li>• R. Strassberg, A. Nakanishi, B. Shamaev, S. Katznelson, R. Schuetz, G. Dosovitskiy, S. Levy, O. Be'er, S. Shaek, T. Onoe, T. Maekawa, R. Hayakawa, K. Tsuji, K. Murai, T. Moriga, and Y. Bekenstein, "Self-Assembled Colloidal Photonic Structures for Directional Radioluminescence of Gd and Ta Oxide Scintillators", <i>Adv. Optical Mater.</i> 2024, 2401030.</li> <li>• Y.-S. Dong, A. Fujisaka, D.-S. Sun-Waterhouse, K. Murai, T. Moriga, G. I. N. Waterhouse, published in <i>Chem. Mater.</i>, 35 (19), 8281-8300 (2023).</li> <li>• "Slow photon photocatalytic enhancement of H<sub>2</sub> production in TaON inverse opal photonic crystals" by T. Maekawa, Y.-S. Huang, N. Tateishi, A. Nakanishi, T. Onoe, Y.-S. Dong, G. I.N. Waterhouse, K Murai, and T. Moriga, published in <i>J. Solid State Chem.</i>, Vol. 329, 124404 (2024).</li> <li>• "Bright Innovations: Review of Next-Generation Advances in Scintillator Engineering", P Singh, G Dosovitskiya and Y Bekenstein, <i>ACS Nano</i> 2024, 18, 14029–14049.</li> </ul>	

## Public announcement of Collaborative Research, Phase 1

2023.05.25

Research Theme	Ultrafast directional x-ray detection using doped tantalum pentoxide 3D photonic crystals for improved scintillation		
Research Period	Jan. 1, 2021 - Dec. 31, 2022		
Researcher Information	Technion		<b>Yehonadav Bekenstein</b> Assistant Professor Faculty of Materials Science and Engineering
	Tokushima Univ.		<b>Toshihiro Moriga</b> Professor Graduate School of Technology, Industrial and Social Sciences, Division of Science and Technology
Publication List (Published Papers, conference, presentations, etc)	<ul style="list-style-type: none"> <li>• OMASUI Harumi, NAKANISHI Akihiro, HAYAKAWA Rino, KAMIKI Ami, MURAI Kei-ichiro*, MORIGA Toshihiro, Synthesis of cerium-doped tantalum oxide and investigation of basic properties, The Ceramic Society of Japan Fall Meeting, 2T20 (2021)</li> <li>• Talk by Dr. Yehonadav Bekenstein, NAC 2022, public talk1, "how can nanomaterials help make a better world?"</li> <li>• Presentation by Tomoya Onoe at the 35th Fall Symposium of Ceramic Society of Japan entitled "Enhancement in emission intensity from GdTaO<sub>4</sub>:Ln<sup>3+</sup> (Ln=Eu and Tb) through SiO<sub>2</sub> photonic crystal" (Sep 2022).</li> <li>• Project 1 (presented in 2021 report) – "A self-assembled photonic scintillator with enhanced directional emission". (Manuscript in preparation)</li> <li>• Project 2 (presented in 2021 report)- "Directional and fast scintillation from LuO<sub>2</sub> / SiO<sub>2</sub> alternating layers co-doped Bi/Eu") manuscript under review (also published on arxiv)</li> <li>• Project on Hydrogen Production Enhanced by Oxynitride Photonic Crystals, "Visible Light Driven Photocatalytic Photonic Crystals" by T. Moriga and N. Hirayama, published in <i>Ceramics Japan</i>, Vol. 57 (5), 313-316 (2022)</li> </ul>		