
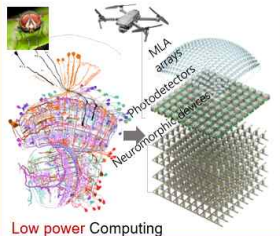
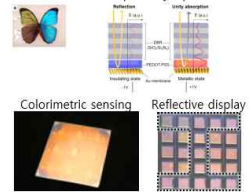



FOEL (Flexible OptoElectronics Laboratory)					
 Flexible Opto Electronics Laboratory	■ Contact information Professor: ymsong81@gmail.com TEL : +82-10-2992-8182 Lab. : E3-2 Room 3207 Website : https://www.ymsong.net				
■ Current state of the Lab. (in 2025 Fall Semester) Postdoctoral Fellows : 2 PhD Students: 7 Master's Student: 1					
■ Research Areas					
<div>Bio-inspired Cameras : Application-specific cameras inspired by animal eyes : Optics/photronics with neuromorphic systems : Intelligent robotics applications  Low power Computing</div>	<div>Tunable Photonics : Photonic behaviors by external stimuli (electric/thermal) : UV/vis./near-IR/Far-IR : Inspired by octopus skin, butterfly wings, and chameleon : Sensing/Display/Photonic synapse  Low power Sensor/Display</div>	<div>Radiative Cooling : Passive Cooling based on effective radiation control : Inspired by micro-/nano-architectures in nature : First research article in <u>S.Korea</u>(2018) : First startup company in <u>S.Korea</u>  No external source Cooling</div>			
Vision Revolution!	Color-Revolution!	Thermo-Revolution!			
○ Vision – Revolution through Bioinspired Photonics - Pioneering a new paradigm in 'energy-efficient' photonic systems – cameras, displays, and thermal devices – through inspiration from nature ○ Research plan - Vision Revolution: Development of bioinspired cameras integrated with in-sensor computing for intelligent vision systems - Color Revolution: Realization of vivid, low-power color generation using nature-inspired structural coloration - Thermo Revolution: Engineering dynamic thermal control systems inspired by thermoregulation mechanisms in nature					
■ Recommended courses & Career after graduation The main prerequisites are knowledge of electromagnetics and semiconductor devices/fabrication. However, students majoring in computer science or circuits are also welcome. Our goal is to help students become key contributors in both academia and industry on a global scale. - 8 PhD Alumni (7 academia (prof./researcher/postdoc)), 1 industry (SAIT))			■ Introduction to other activities besides research The lab holds annual group parties (Home Coming Day and others) and joint workshops to foster potential collaborations. We also participate in international conferences, including SPIE, MRS, and IEEE. Additionally, we plan to organize regular outdoor activities such as soccer, badminton, and table tennis (participation is optional).		
■ Introduction to the Lab. Our research group works on a wide range of multidisciplinary areas, including optics/photronics, material sciences, optoelectronics, device physics, image processing and robotics demonstration. This allows students engage in various fields beyond device area. We actively collaborate with both universities and industry partners, providing opportunities for students to be involved in cutting-edge research projects.					
■ Representative recent research achievements ('22~'24) <ul style="list-style-type: none">● Feline eye-inspired artificial vision for enhanced camouflage breaking under diverse light conditions, Sci. Adv. 10, eadp2809, 2024● Avian eye-inspired perovskite artificial vision system for foveated and multispectral imaging, Sci. Robot. 9, eadk6903, 2024● Sub-1-volt electrically programmable optical modulator based on active Tamm plasmon, Adv. Mater. 36, 2310556, 2024● Cuttlefish-eye-inspired artificial vision for high-quality imaging under uneven illumination conditions, Sci. Robot. 8, eade4698, 2023● An amphibious artificial vision system with a panoramic visual field, Nat. Electron. 5, 452, 2022● Perovskite microcells fabricated using swelling-induced crack propagation for colored solar windows, Nat. Commun. 13, 1946, 2022● Revisiting silk: a lens-free optical physical unclonable function, Nat. Commun. 13, 247, 2022● 2021, 2023 Samsung HumanTech Gold Medal (삼성 휴먼테크 금상 수상, Physical Device 분과)● 2023 Researcher of the Month (이달의 과학기술인상, 전기/전자 부문)● <i>Outlook in Nature</i>: 'How the natural world is inspiring the robot eyes of the future' (네이처지 연구실 소개 기사)					