

## About AXEL



차세대 디스플레이 & 반도체 연구  
유기 복합 소재를 활용한 연구



다수의 SCI 논문 게재, 국제 학회/저널 발표  
120편 이상의 SCI 논문  
최근 5년 주/교신저자 논문 44편



다수의 국제/국내 특허 출원 및 등록  
정부출연 및 기업들과 협력 project

## Prof. Yongtaek Hong



### Education

- BS & MS in Electronics Engineering, Seoul National University, Seoul, KR
- PhD in EECS, University of Michigan, Ann Arbor, MI, USA

### Experience

- Visiting Professor, Chemical Engineering, Stanford University
- IEC TC110 WG8 Convenor, IEEE ED Chair (2014~), SID Chair (2017~)
- Member of the Korean Academy of Science and Technology (KAST)

### Award

- SNU CoE Shinyang Award (2015)
- 100 Technology Lighting-Up Korea in 2025 (2017)
- Ministry Awards from MOTIE (2018) and MSIT (2019); Merck Award (2020)

## Research Areas

### Next-Gen Display

#### Overview

##### 1. Flexible/Stretchable Light Emitting Devices

- Structural engineering using micro-wrinkles structure and rigid-island structure for stretchable electronics
- Analysis on mechanical and electrical characteristics of devices for flexible/stretchable displays
- Optoelectronic performance evaluation of OLED/QLED

##### 2. Advanced Manufacturing Process

- Lithography-free patterning for OLED/QLED/ $\mu$ -LED
- High resolution Electrohydrodynamic (EHD) inkjet printing
- Solution processing (inkjet printing, spray-coating etc.)
- Thermal evaporation, transfer printing

##### 3. Deformation and Failure Analysis

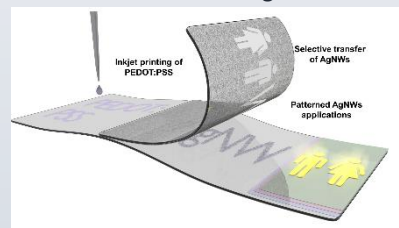
- 2D/3D-Digital Image Correlation (DIC) for strain analysis

#### Flexible photonic skin

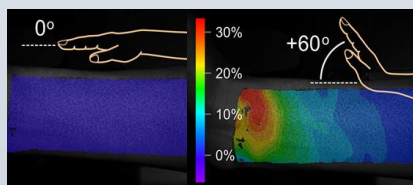


*Nat. Commun.*, **11**, 663 (2020)

#### Advanced Manufacturing Process



*Adv. Mater. Technol.*, **5**, 6, 2000042 (2020)



Deformation and Failure Analysis



*Sci. Adv.*, **7**, 23, eabg9180 (2021)

### Human-Machine Interface

#### Overview

##### 1. Self-Powered Electronics

- Stretchable thermoelectric generators for self-powered soft devices

##### 2. Customizable Wearables

- Soft modular electronic blocks for customizable, wearable electronics

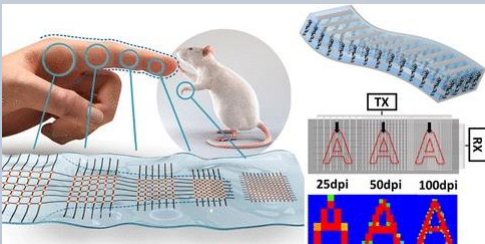
##### 3. Soft Sensors

- Soft mechanical sensors for motion detection and health monitoring



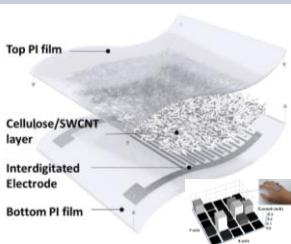
Self-Powered Electronics

*Nat Commun.*, **11**, 5948 (2020)

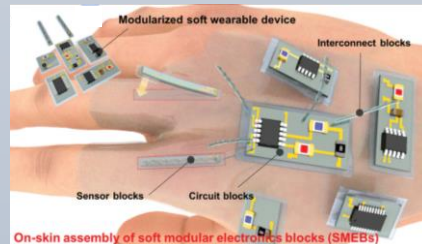


Soft Sensors

*ACS. Appl. Mater. Interfaces*, **14**, 49 (2022)



*ACS. Appl. Mater. Interfaces*, **13**, 44 (2021)



Customizable Wearables

*Adv. Sci.* **6**, 1801682 (2019)

### Innovative Circuitry

#### Overview

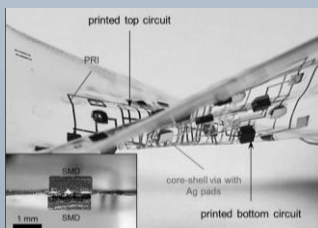
##### 1. Nanomaterial Electronics

- High-performance and transparent flexible/stretchable CNT TFTs
- Solution process of nanomaterials (AgNW, CNT, ANP)

##### 2. Inkjet-Printed TFTs

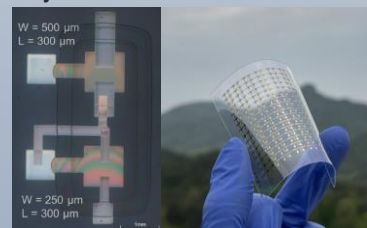
- Lithography-free process of flexible/stretchable TFTs
- Solution processed TFTs for advanced circuitry

#### Nanomaterial Electronics



*Adv. Funct. Mater.*, **27**, 36, 1701912 (2017)

#### Inkjet-Printed TFTs



*ACS Appl. Mater. Interfaces*, **13**, 43163 (2021)