

ACELAB



Homepage URL

Advanced TFTs and Circuits for Smart Electronics Laboratory

People

Professor



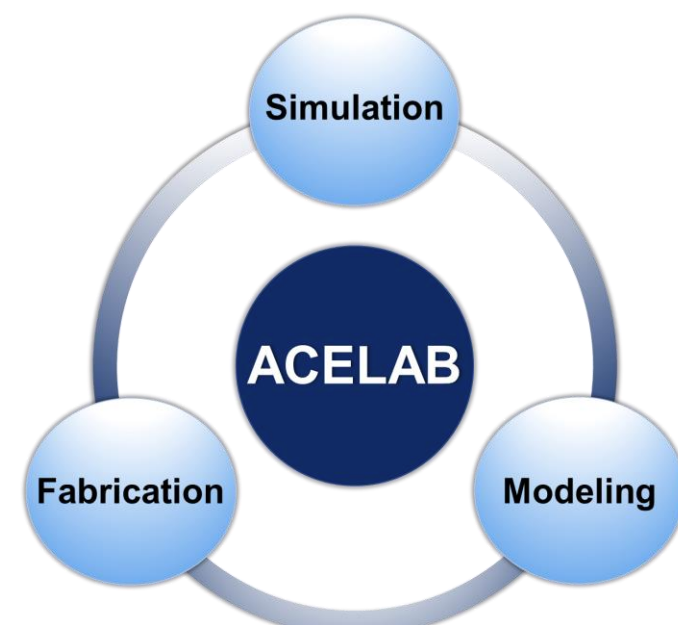
이수연 교수님

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- 2009 B.S. Electrical Engineering, Seoul National University
- 2013 Ph.D. Electrical Engineering, Seoul National University
- 2013 – 2019 Senior Researcher, Samsung Display
- 2019 – 2023 Assistant Professor, Seoul National University
- 2023 – Present Associate Professor, Seoul National University
- SID Display Electronics subcommittee member
- IMID Display Electronics and Systems 분과 간사
- KIDS 구동기술 및 시스템 연구회 위원

Members

8 Ph.D. courses, 7 M.S. courses

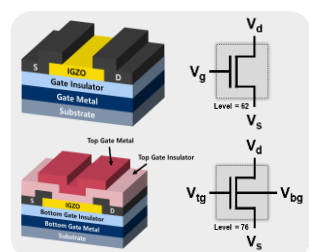
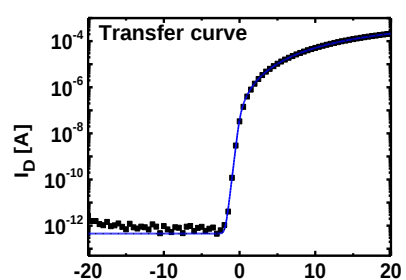


Recommended Prerequisites
기초회로, 전자회로, 아날로그회로,
전자공학, 양자역학, 반도체소자 등

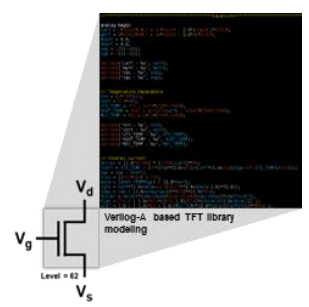
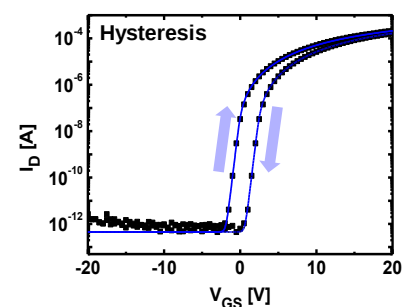
Circuit Design & Simulation

TFT modeling

- 실측치 기반의 HSPICE TFT model library 제작

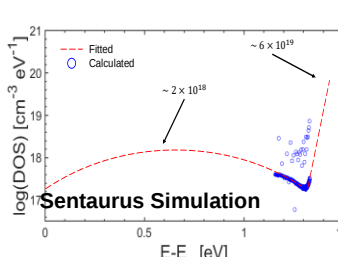
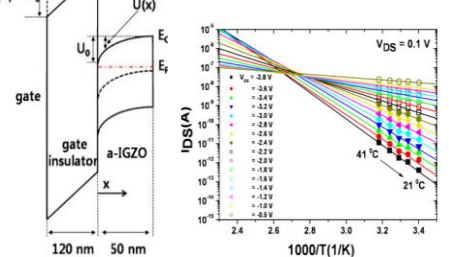


- HSPICE Verilog-A 코드를 활용하여 hysteresis 등 시간에 따른 특성 변화 모사가 가능한 library 제작



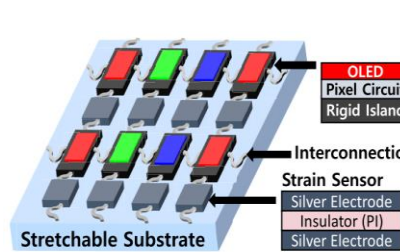
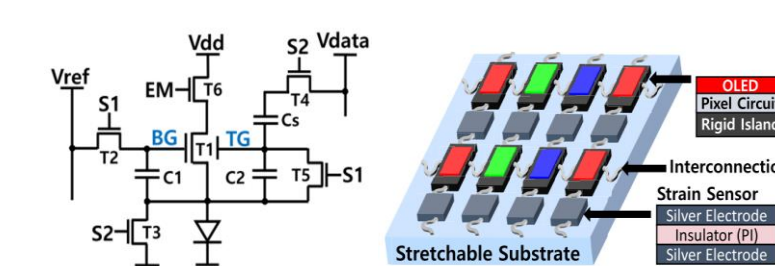
- Density of state(DOS) 모델링

- TCAD를 활용한 DOS 추출 및 특성 검증

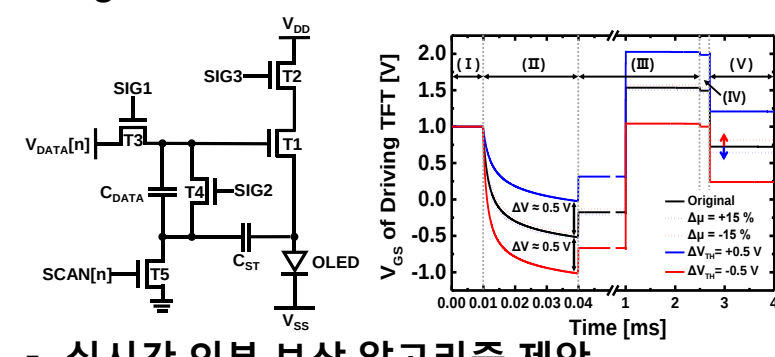


OLED Pixel Circuit

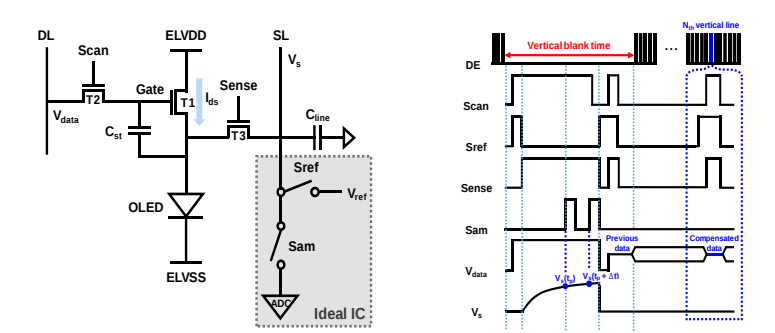
- Stretchable 기판 상 OLED 픽셀 내부 보상 회로 제안



- Rigid 기판 상 OLED 픽셀 내부 보상 회로 제안

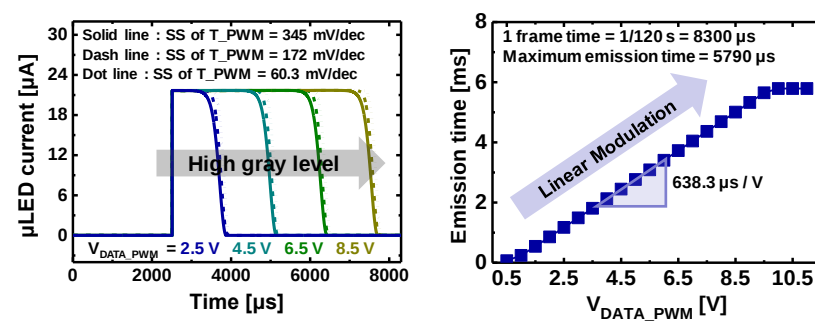
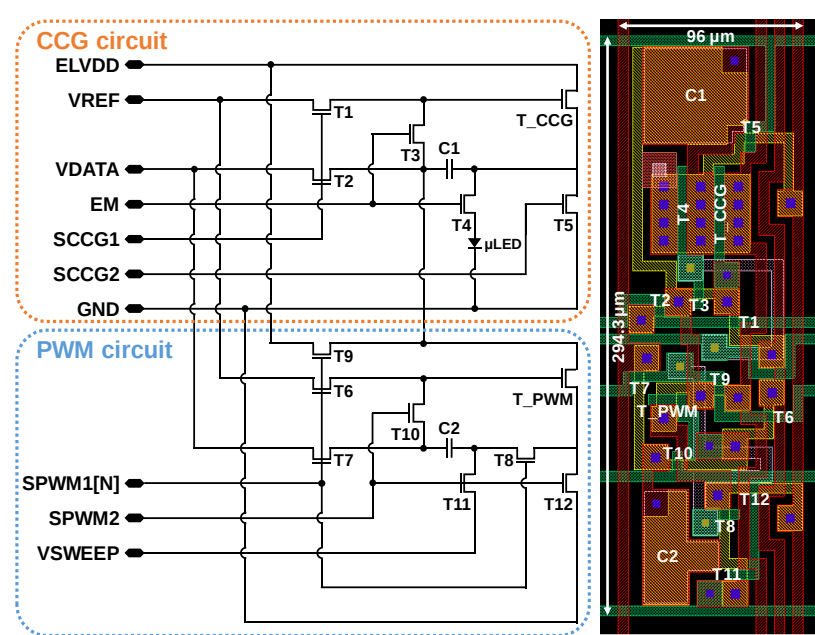


- 실시간 외부 보상 알고리즘 제안



Micro-LED Pixel Circuit

- 펄스 폭 조절(PWM) 구동 방식 기반의 마이크로LED 픽셀 회로 제안



Device Fabrication & Characterization

Thin Film Deposition

PECVD, ALD, Sputtering,
Thermal & E-beam evaporation

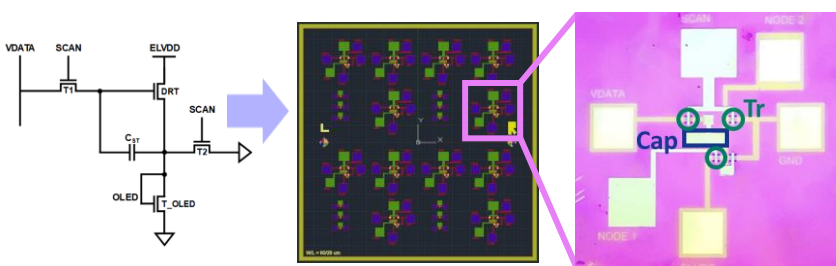
- ALD



- RF Sputter



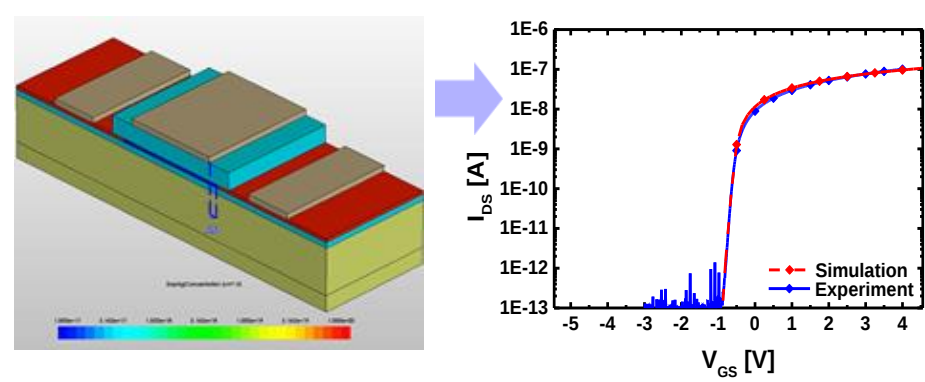
- OLED pixel 회로 구현



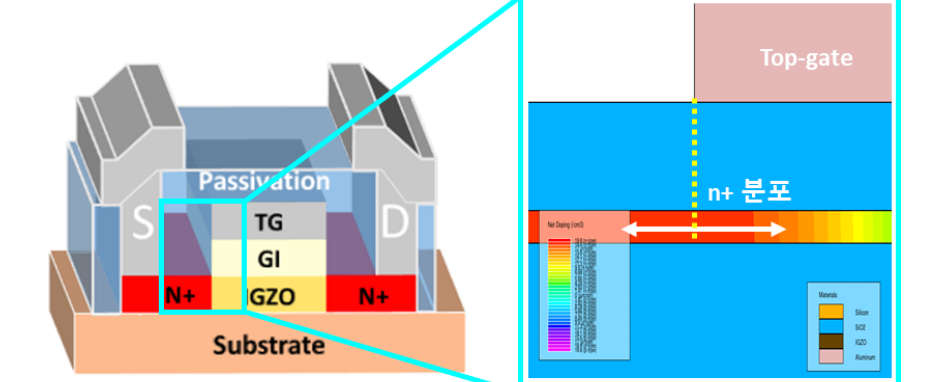
Device Simulation

Spice, COMSOL Multiphysics, TCAD, MATLAB, Python

- TCAD Sentaurus를 사용한 TFT device modeling

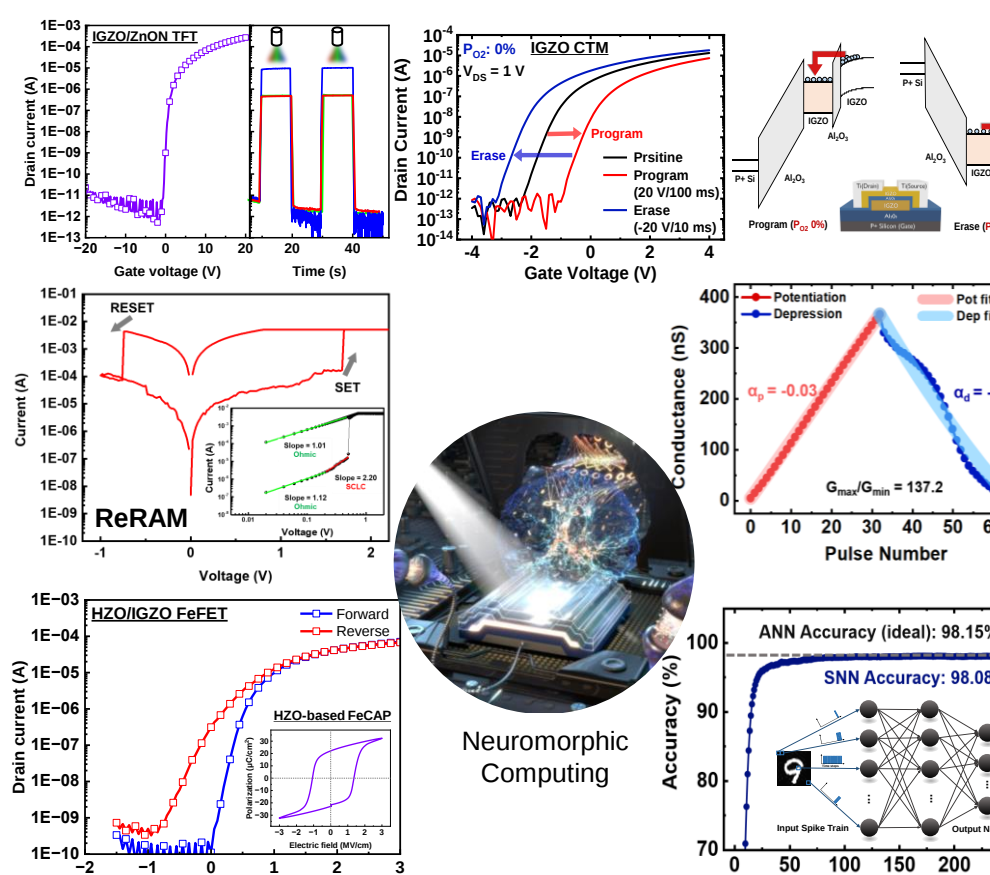


- TCAD ATLAS를 사용한 Short Channel IGZO TFT 모델링



Applications

- 고성능 트랜지스터, 전하 트래핑 플래시 메모리 소자 개발
- 차세대 비휘발성 메모리 소자 기반 시냅스 특성 모방



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