MNTL (MEMS & NanoTechnology Lab) - Professor

Prof. Dong-Weon Lee

Contact

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- **Lab. Homepage**
  http://mems.jnu.ac.kr

Research Area

- Biomedical Micro-Device and System for Personal Healthcare
- Smart Sensors and Actuators for Intelligent Machines
- Functional Structures and Materials for Smart Manufacturing
- Miniaturized Energy Harvesting and Storage System

Project

연구기간	과제명	지원기관	예산
2007.07.01. ~2012.06.30.	질량분석기가 집적화된 다기능 원자현미경 시스템 개발	한국연구재단	1,010,000천원
2009.04.01. ~2013.08.31.	그래핀 기반 나노-바이오 트렌스듀서 개발	한국연구재단	2,770,000천원
2013.11.01. ~2017.10.31.	약물 심장독성 검사 시스템 개발	한국산업 기술진흥원	4,690,000천원
2017.11.01. ~2022.10.31.	생체모방공학 기반 차세대 융·복합 자극/센싱 통합시스템 개발	한국연구재단	1,500,000천원
2020.07.01. ~2027.02.28.	심혈관 환자맞춤형 차세대 정밀의료기술 선도연구센터	한국연구재단	15,215,000천원
2022.09.01. ~2027.02.28.	융복합 자극 및 센싱 시스템을 이용한 고효율 약물심장 독성스크리닝 및 3D 심장패치 제조를 위한 의료플랫폼개발	한국연구재단	1,287,139천원

전남대학교 CHONNAM NATIONAL UNIVERSITY

MNTL MEMS and Nanotechnology Lab

MNTL (MEMS & NanoTechnology Lab) - Members

S.Arunkumar

Research Professor

Tailored nanostructures, gas sensors, bio-sensors

Nomin-Erdene

Research Professor

Biomems, Polymer-based biosensor

김종윤

Post Doctoral Fellow

Maturation of cardiomyocytes for disease modeling

Biswajit Mahanty

Post Doctoral Fellow

Piezo-, Tribo- & Pyroelectric Nanogenerators/sensors.

Karthikeyan M

Post Doctoral Fellow

Microfluidic stretchable wireless pressure sensor

Sivasankar Koppala

Post Doctoral Fellow

2D Materials, MXenes, Metal Oxides, Sensors, & Supercapacitors

Fatema Kamrun Nahar

Post Doctoral Fellow

Bone tissue engineering and drug delivery

임대윤

Ph.D. course

MEMS

Sun Haolan

Integrated course

High-Sensitive Sensor

Wei Jinlinag

Integrated course

Wireless sensor devices for personal health monitoring

Li Longlong

Integrated course

Wireless sensor for personal health monitoring

Wang Lei

Integrated course

Wireless sensor for personal health monitoring

Qu Zhu ji

Integrated course

Strain sensor for Personal health monitoring

Liu Ke

Integrated course

Polymer cantilever and high-sensitive sensor

김도경
M.S. course

MEMS based sensor

양승진
M.S. course

high sensitive sensor

구흥모

M.S. course

MEMS based sensor
MEMS based sensor

이준혁

M.S. course

MEMS based sensor

김현수

M.S. course

MEMS based sensor

최우선
Staff

이주은
Staff

양수지
Staff

오정훈
Engineer

서영걸
Staff

곽민
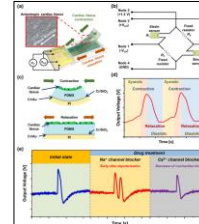**Staff**

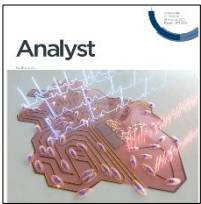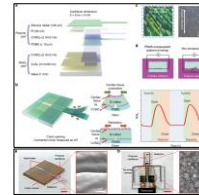# MNTL (MEMS & NanoTechnology Lab) – Research area

Topic 1   Biomedical Device and System

Nomin-Erdene Oyunbaatar, et al. "Real-time Monitoring of Changes in Cardiac Contractility using Silicon Cantilever Arrays Integrated with Strain Sensor." *ACS Sensors 6* (2021) 3556-3563. **[IF: 7.711, JCR: 2.9%]**

Jong Yun Kim, et al. "Enhancement of Cardiac Contractility Using Gold-coated SU-8 Cantilevers and Their Application to Drug-induced Cardiac Toxicity Tests." *Analyst (2021)*. **[IF: 3.978, JCR: 16 %]**


Dong-Su Kim, et al. "64 PI/PDMS Hybrid Cantilever Arrays with an Integrated Strain Sensor for a High-Throughput Drug Toxicity Screening Application." *Biosensors and Bioelectronics 190* (2021) 113380. **[IF: 10.257, JCR: 0.5%]**

Dong-Su Kim, et al. "Highly durable crack sensor integrated with silicone rubber cantilever for measuring cardiac contractility." *Nature communications* 11 (2020) 1-13. **[IF: 12.121, JCR: 7%]**

Topic 2   Micromachined Sensor & Actuator
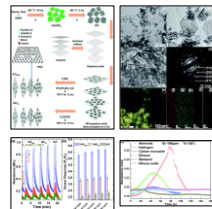
Arunkumar shanmugasundaram, et al. "Hierarchical nanohybrids of B-and N-codoped graphene / mesoporous NiO nanodisks: an exciting new material for selective sensing of H_2S at near ambient temperature." *Journal of Materials Chemistry A* 7 (2019) 9263-9278. **[IF: 11.301, JCR: 7%]**
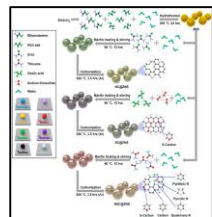

Arunkumar shanmugasundaram, et al. "N-/S-Dual Doped C@ZnO: An Excellent Material for Highly Selective and Responsive NO2 Sensing at Ambient Temperatures " *Chemical Engineering Journal 421* (2021) 127740. **[IF: 10.652, JCR: 2.4%]**

Topic 3   Energy Harvesting & Storage System
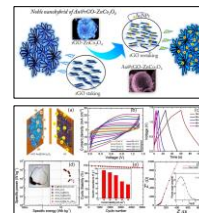
Swati J. Patil, et al. "Gold nanoparticles decorated rGO-$ZnCo_2O_4$ nanocomposite: A promising positive electrode for high performance hybrid upercapacitors." *Chemical Engineering Journal* 379 (2020) 122211. **[IF: 10.652, JCR: 3%]**
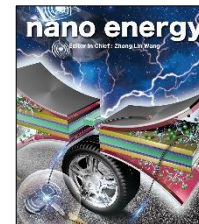
Jingui Qian, et al. "On-vehicle triboelectric nanogenerator enabled self-powered sensor for tire pressure monitoring." *Nano Energy* 49 (2018) 126-136. **[IF: 16.602, JCR: 5%]**
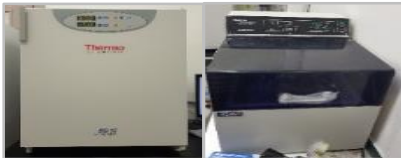
MNTL (MEMS & NanoTechnology Lab) - Equipment

세포 배양	제작 공정	형상 측정	특성 평가
Clean bench / Optical microscope	Pattern generator / Mask aligner	AFM / Nano scan	Laser vibrometer / NI-PXI
Centrifuge / UV exposure system	3D printer / Sputter	SEM / Surface profiler	Spectrum analyzer / LCR meter
CO_2 incubator / Shaking incubator	O_2 Plasma asher / RIE	Digital 3D microscope / Contact angle	Probe station / Oscilloscope
총 10개 장비 보유	총 40개 장비 보유	총 14개 장비 보유	총 41개 장비 보유

MEMS & **N**ano **T**echnology **L**ab

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