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# 박희준

박희준은 서울캠퍼스 공과대학 유기나노공학과 교수이자, 전자 소재 및 소자 연구실장을 겸임하고 있다.

유기나노공학과 홈페이지 참고(2019.10.)

□

## 목차



# 학력

- Apr. 2012  The University of Michigan Ph.D. in Macromolecular Science & Engineering / Electrical Engineering Solid State Electronics Laboratory (SSEL)
- Feb. 2004  Seoul National University (SNU) Master of Science in Materials Science & Engineering Nanomaterials for Eco-Friendly Energy Conversion Laboratory
- Feb. 2002  Seoul National University (SNU) Bachelor of Science in Materials Science & Engineering

# 경력

- Sep. 2019 ~ Present Hanyang University Associate Professor, Department of Organic and Nano Engineering

- Sep. 2015 ~ Aug. 2019  Ajou University Assistant / Associate Professor, Department of Electrical and Computer Engineering
- Sep. 2014 ~ Aug. 2019  Ajou University Assistant / Associate Professor, Department of Energy Systems Research
- Mar. 2012 ~ Feb. 2014  Intel Corporation Senior Research Engineer (Full-Time Staff), Portland Technology Development
- Oct. 2007 ~ Dec. 2011  The University of Michigan Research Assistant, Department of

Electrical Engineering & Computer Science
- Mar. 2006 ~ Jul. 2007　Korea Institute of Science and Technology (KIST) Research Scientist (Full-Time Staff), Hybrid Materials Research Center
- Mar. 2004 ~ Mar.2006　LG Electronics, Inc. Research Engineer (Full-Time Staff), Eco-Technology Group, CTO Division
- Mar. 2002 ~ Feb. 2004　Seoul National University (SNU) Research Assistant, Department of Materials Science & Engineering

# 연구관심분야

Semiconductor/display materials and devices

# 주요연구

## 갈륨비소(GsAs) 화합물'에 '페로브스카이트 반도체'를 결합한 '탠덤 태양전지' 개발(2020.01)

- 한양대 유기나노공학과 박희준 교수와 아주대 이재진 교수 공동연구팀이 유연한 '갈륨비소(GsAs) 화합물'에 '페로브스카이트 반도체'를 결합한 '탠덤 태양전지'를 개발했다.
- 갈륨비소 화합물 위에 쌓아올려 제작한 탠덤 태양전지는 기존보다 효율이 15% 이상 높은 것으로 나타났다.
- 가볍고 유연한 화합물 반도체 태양전지의 광전환효율을 높이기 위해 저가의 페로브스카이트를 활용한 탠덤 구조 태양전지 구현을 통해 비용 상승 부담을 완화했다.
- 장파장 빛을 흡수하는 화합물 반도체 결정 위에 단파장의 빛을 흡수하는 페로브스카이트 박막을 적층, 보다 다양한 파장의 빛을 활용하도록 함으로써 전기에너지 변환효율을 높이는 방식이다.
- 탠덤 태양전지는 자동차, 무인비행기, 웨어러블 기기는 물론 사물인터넷(IoT) 센서 에너지원 등으로 활용할 수 있을 것이다.
- 지원 : 과학기술정보통신부, 교육부, 한국연구재단이 추진하는 기초연구사업 (중견연구 및 기본연구 등) 등
- 연구 결과는 국제 학술지 「Advanced Energy Materials」 2019년 12월 19일 자 표지논문으로 게재

# 주요논문

- Management of Transition Dipoles in Organic Hole-Transporting Materials under Solar Irradiation for Perovskite Solar Cells Nature Communications, 9, 4537 (2018)
- Direct Synthesis of Thickness-Tunable MoS2 Quantum Dot Thin Layers: Optical, Structural and Electrical Properties and Their Application to Hydrogen Evolution Nano Energy, 35, 101 (2017)
- Advanced Heterojunction Structures of Polymer Solar Cells Generating High Photocurrent with Internal Quantum Efficiency Approaching 100% Advanced Energy Materials, 3, 1135 (2013)
- Optimization of Polymer Solar Cells with Bulk Heterojunction Layers Hundreds of Nanometers Thick: Modifying the Morphology and Cathode Interface Energy & Environmental Science, 6, 2203 (2013)

- Photonic Color Filters Incorporated with Organic Solar Cells for Energy Harvesting ACS Nano, 5, 7055 (2011)
- Continuous Patterning of Nanogratings by Nanochannel-Guided Lithography on Liquid Resists Advanced Materials, 23, 4444 (2011)
- Facile Route to Polymer Solar Cells with Optimum Morphology Readily Applicable to Roll-to-Roll Process without Sacrificing High Device Performances Advanced Materials, 22, E247 (2010)
- Efficiency Enhancement of Organic Solar Cells using Transparent Plasmonic Ag Nanowire Electrodes Advanced Materials, 22, 4378 (2010)
- Large Area High Density Sub-20 nm SiO2 Nanostructures Fabricated by Block Copolymer Template for Nanoimprint Lithography ACS Nano, 3, 2601 (2009)
- Giant Thermal Tunability of the Lamellar Spacing in Block-Copolymer-Like Supramolecules Formed from Binary-End-Functionalized Polymer Blends Advanced Materials, 18, 624 (2006)

# 저서

# 수상

- Ajou Publication Awards, Ajou University (2016, 2017, 2018)
- LTD Divisional Award (2 times), Intel Corporation (2013, 2014)
- Horace H. Rackham Predoctoral Fellowship, The University of Michigan (2011-2012) : the highest honor graduate school bestows on Ph.D. candidates
- Charles G. Overberger Award, The University of Michigan (2010) : in recognition of excellence in research for Ph.D.
- Horace H. Rackham International Student Fellowship, The University of Michigan (2009) : awarded to outstanding international graduate students
- Macro/Rackham Block Grant Fellowship, The University of Michigan (2007-2008)
- Korea Government Overseas Study Fellowship, Korea Government (2007-2009) : one of 30 awardees, nationally
- Outstanding Achievement Award: 2nd (2 times), CTO Division, LG Electronics (2004, 2005)
- Distinguished honor scholarship, Seoul National University (B.S.: 1998-2001, M.S.: 2002)

# 관련 기사

- <뉴스H> 2020.01.31 박희준 교수, 화합물 반도체에 페로브스카이트 결합 태양전지 효율 높이다 http://www.newshyu.com/news/articleView.html?idxno=751043
- <뉴스H> 2023.04.07 인공지능 반도체 핵심 소자의 한계를 극복하다