

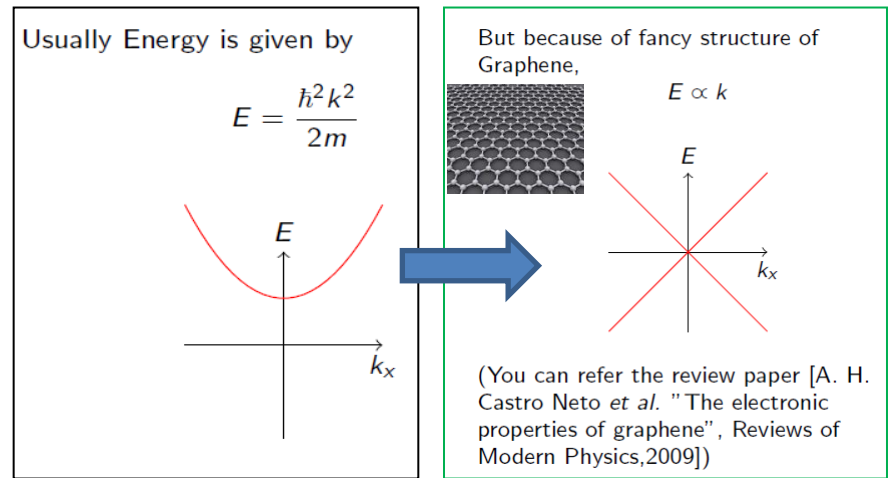
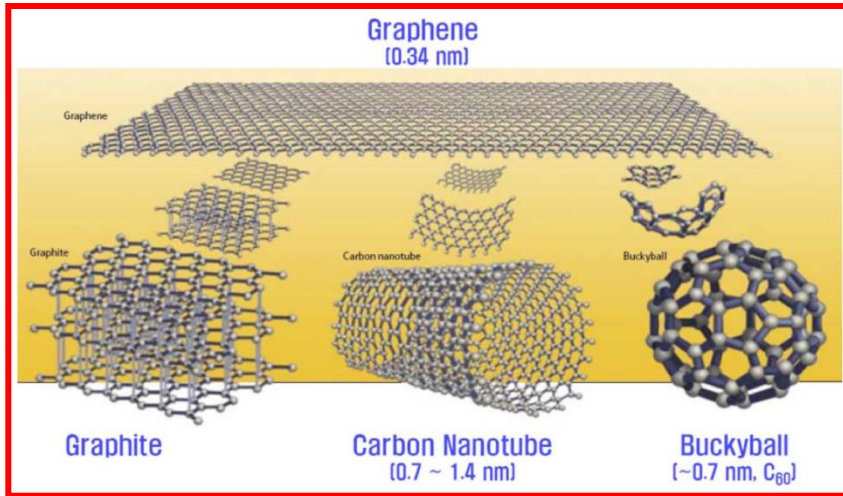
산화물 반도체-나노카본 핵-껍질 일체형 양자점을 이용한 고효율 자외선 태양전지 소자

개발자: 최원국

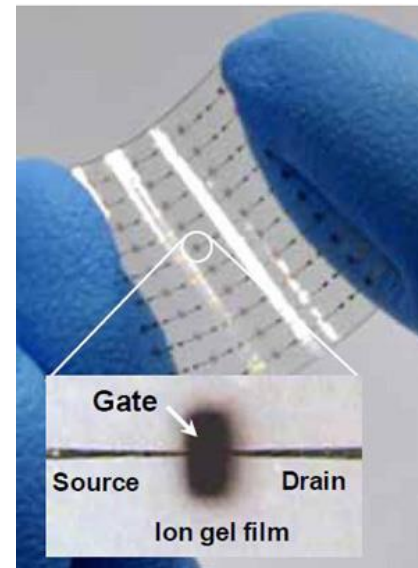
Korea Institute of Science
and Technology

한국과학기술연구원

1. 기술의 개요

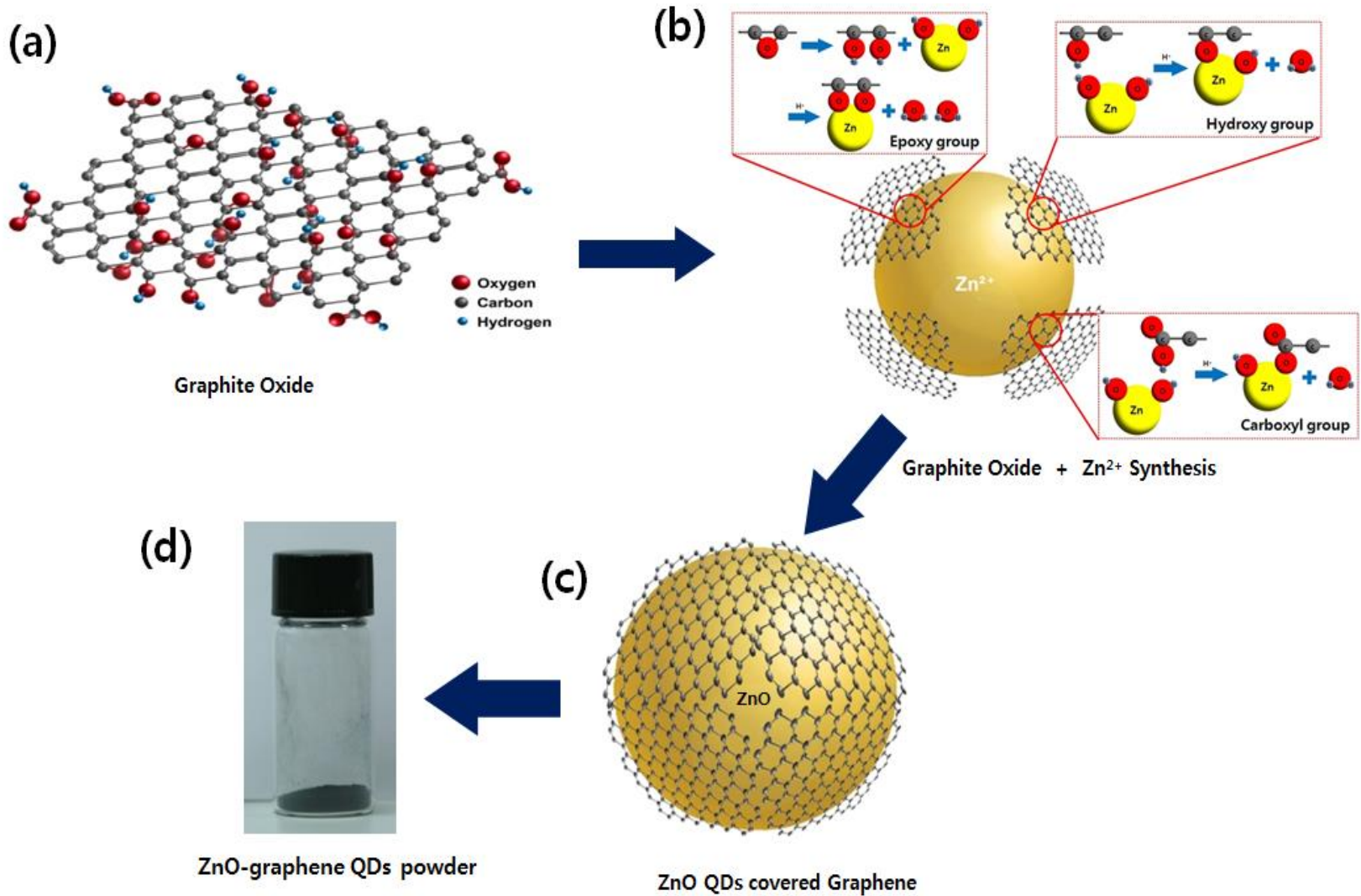


	a-Si	PEDOT: PSS	CNT	Graphene
Mobility(@RT) (cm ² /Vs)			1x10 ⁵	2x10 ⁵
Resistivity (ρ)(Ωcm)			1.6x10 ⁻⁶	1.0x10 ⁻⁶
Bandgap (eV)	1.1-1.4		0.5-1.0	0-0.3
Thermal conductivity (W/mK)			3000-3500	5300
Young's modulus (Tpa)			1-2	1
J _{max} (A/m ²)			10 ⁶	10 ⁸



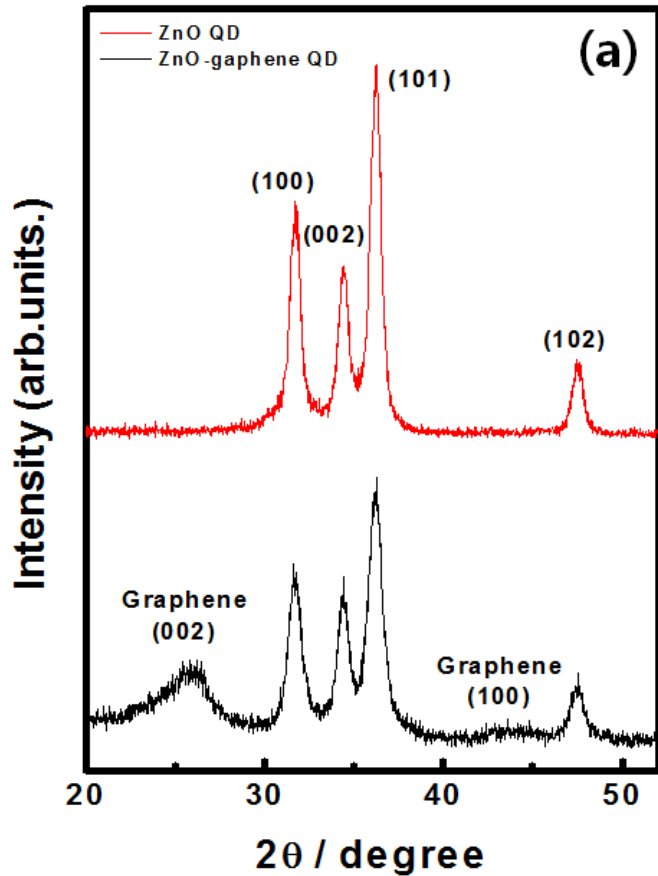
$$\mu = \frac{q}{m^*} t$$

1. 기술의 개요

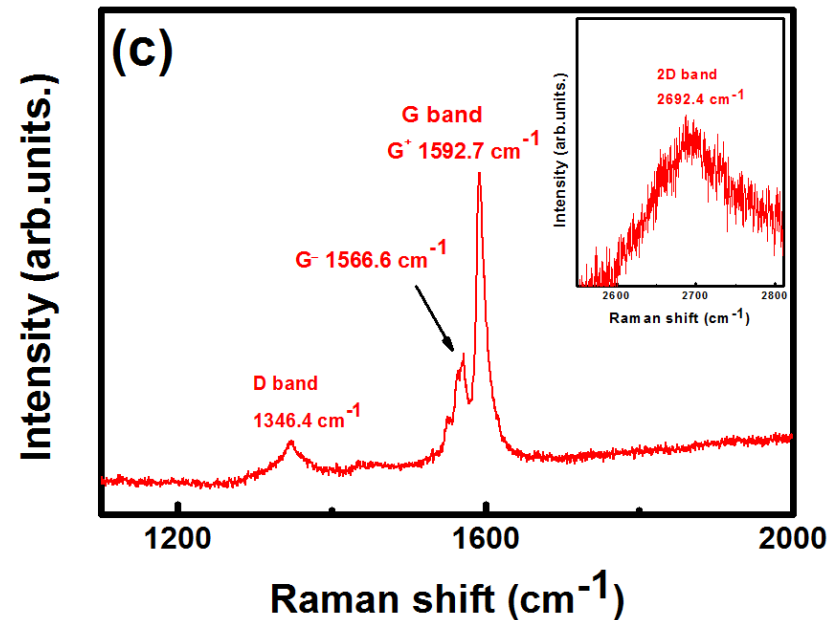
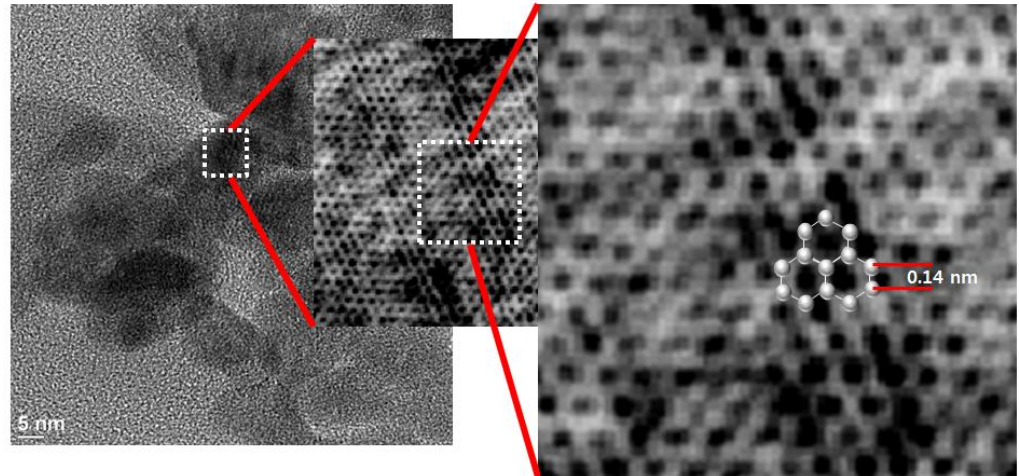


3. 본 기술의 개발 상태

XRD/TEM/FT-Raman

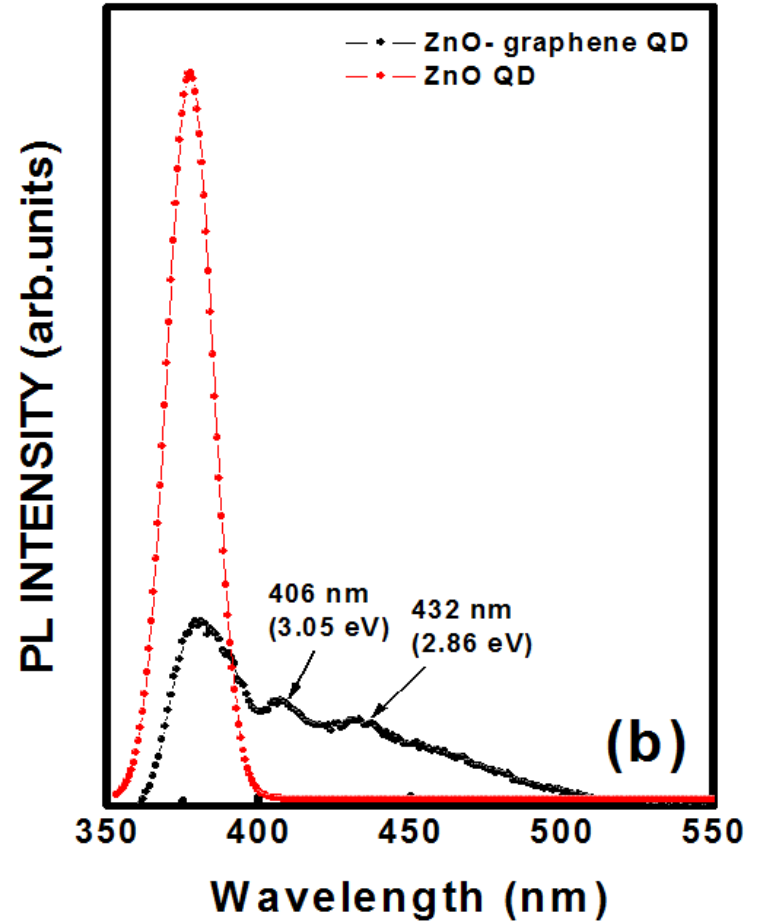
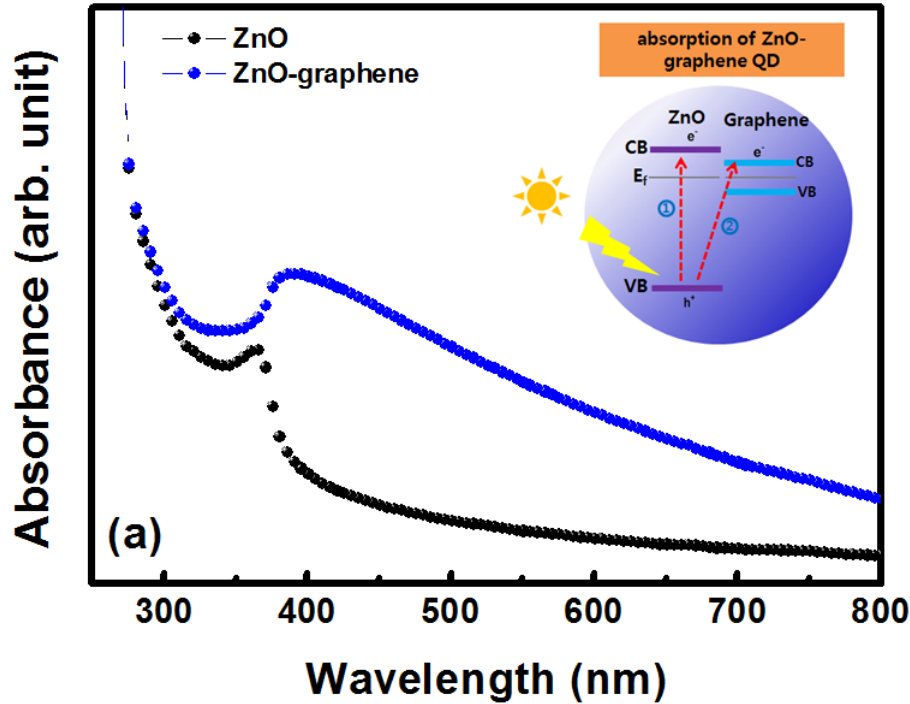


(b)



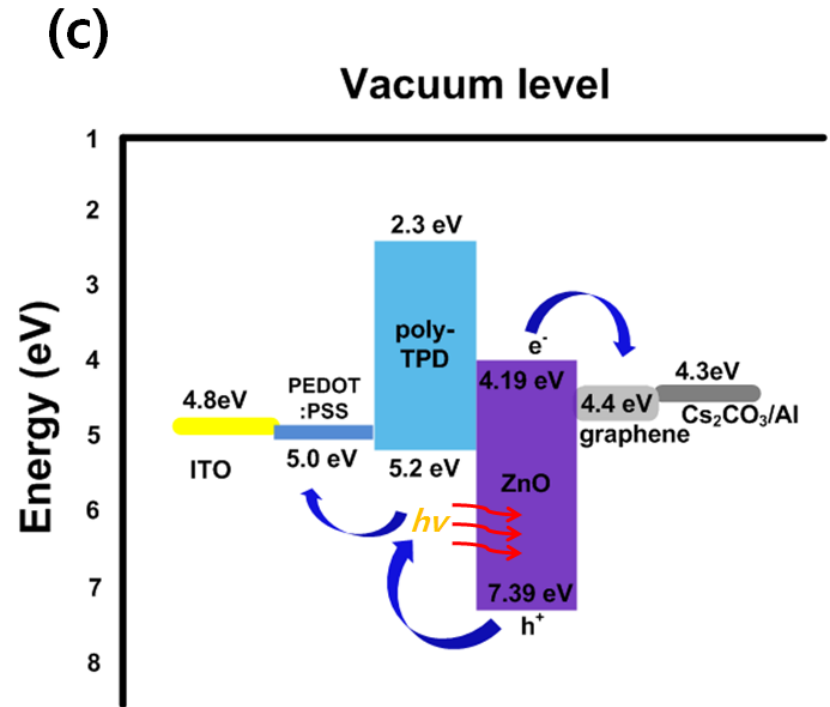
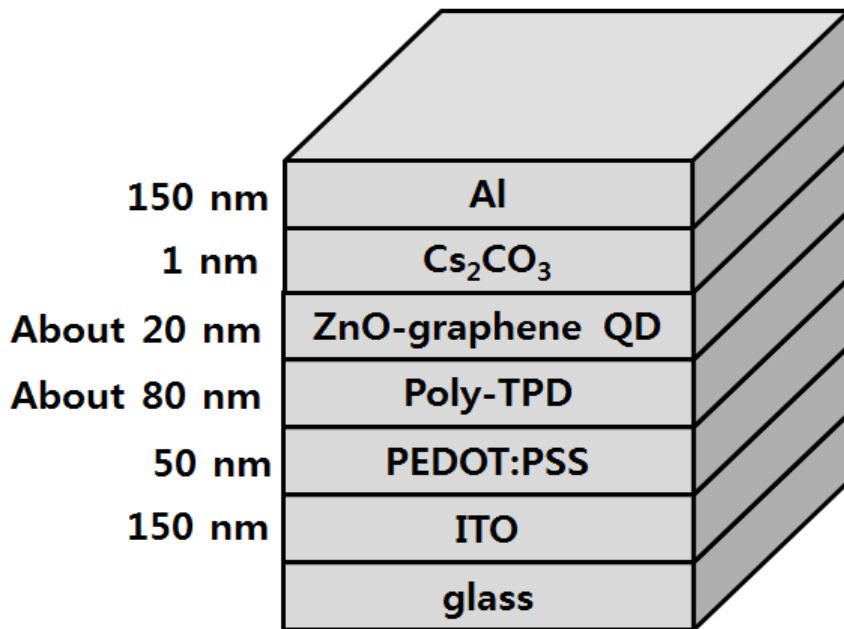
3. 본 기술의 개발 상태

Absorption/quenching



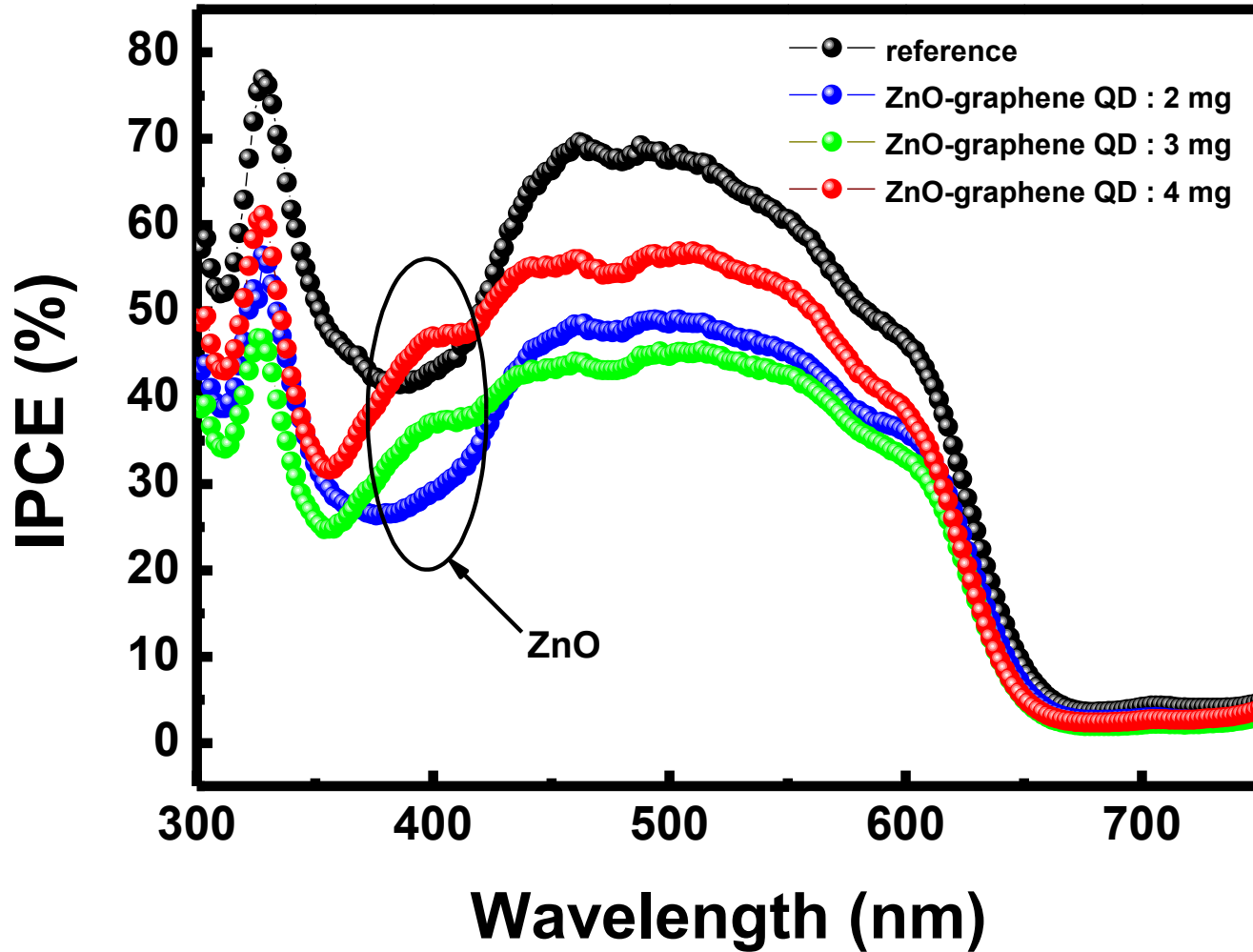
3. 본 기술의 개발 상태

UV PV/band diagram



3. 본 기술의 개발 상태

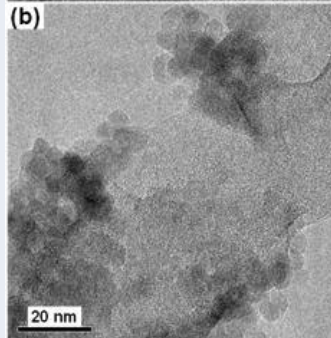
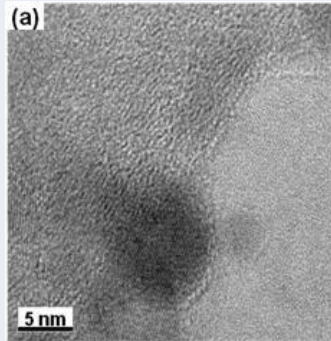
Normal OPV
(P3HT:PCBM) + (ZnO-graphene)



4. 본 기술의 특징 및 차별점

	선행기술	기술요약	본발명과의 비교
	Fushan Li ¹ , Sung Hwan Cho ¹ , Dong Ick Son ¹ , Tae Whan Kim ^{1,a} , Sun-Kyun Lee ² , Yong-Hoon Cho ² , and Sungho Jin ³ APL.94, 111906 (2009)	UV photovoltaic cells based on conjugated ZnO quantum dot/multiwalled carbon nanotube heterostructures	QD와의 접촉 면적넓힘 (CNT--→graphene, C60)

기존 특허
(제목, 특허번호)



0.8 V, 231 $\mu\text{A}/\text{cm}^2$, 0.24,
and **1.14%**

