

# Nabil-932

## Flexible Transparent conductive electrodes for OPV

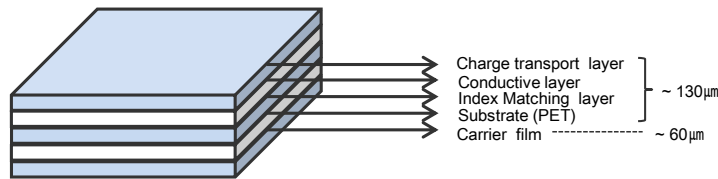
### 1. Key Feature

- Transparent electrode for OPV (Cathode)
- Low sheet resistance
- High flexibility
- Good adhesion

### 2. Application

- BIPV: Building Integrated Photovoltaic System
- VIPV: Vehicle Integrated Photovoltaic System
- RIPV: Road Integrated Photovoltaic System
- Wireless IoT Products for medical, sports devices, security sensors, cameras etc.

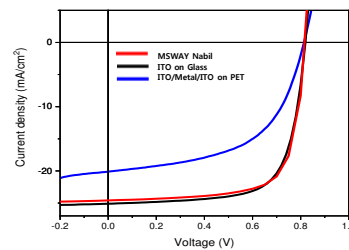
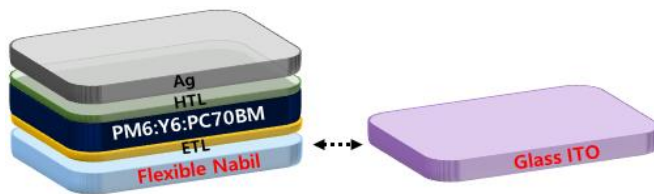
### 3. Product Structure



### 4. Properties

Properties	Result
Sheet Resistance ( $\Omega/\square$ )	$\leq 13$
Transmittance(550 nm) (%)	$\geq 87$
Haze (%)	$\leq 0.9$
WF (eV)	-4.3~-4.2
Surface Roughness (nm)	$\leq 2$
Surface Energy (dyne/cm)	$\geq 56$
Adhesion	$\geq 4B$
Flexibility (R/R <sub>0</sub> )	$\leq 10\%$ (R=7 mm, 10,000 cycles)

### 5. OPV Cell Efficiency(Nabil-932 vs. ITO on Glass vs. OMO on PET)



Parameter	MSWAY	ITO on Glass	ITO/Metal/ITO on PET
Transmittance (% , 550 nm)	88	89	86
Sheet resistance ( $\Omega/\text{sq}$ )	12	10	11
Voc(V)	0.84	0.82	0.81
Jsc(mA/cm <sup>2</sup> )	24.6	25.1	20.1
FF(%)	70.4	70.4	55.1
IPCE(%)	14.6	14.5	9.0

\* MSWAY production OPV 4.64 mm<sup>2</sup> cell actual measurement data

\* All measurement values are subject to change without prior notice.