**Table 1.** Important parameters for PeSCs based on ITO and metal thin films

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Device** | **VOC**  **(V)** | **JSC**  **(mA/cm2)** | **PCE**  **(%)** | **FF**  **(%)** |
| ITO-based PeSCs | Opaque (Cu 40 nm) | | 0.94 | 16.73 | 12.27 | 77.82 |
| Semitransparent (Cu 8 nm) | | 0.98 | 14.07 | 9.19 | 66.77 |
| ITO-free  semitransparent  PeSCs | Cu 15 nm/PEDOT:PSS | | 0.86 | 4.06 | 2.19 | 63.03 |
| Cu 15 nm/NiO | | 0.89 | 6.35 | 3.72 | 65.66 |
| Ni 6nm/PEDOT:PSS | | 0.97 | 8.24 | 4.92 | 61.44 |
| Ni 6nm/ NiO | | 0.98 | 11.90 | 8.20 | 70.02 |

**Fig. 1.** Variation in photovoltaic parameters of PeSCs based on Cu and Ni with PEDOT:PSS and NiOx HTLs그림3-b