

Supporting information

Cost estimates of production scale semitransparent organic photovoltaic modules for building integrated photovoltaics.

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Contents

1. Detailed materials cost estimate
2. Cost sensitivity chart
3. ST-OPV structure used for cost estimate

1. Materials cost estimate

Layer	Supplier	Layer thickness	Density (g/cm ³)	Usage (mg/m ²)	Cost (\$/g)	Cost (\$/m ²)	References
ZnO	Sigma Aldrich	20 nm	5.6	7	3.9	0.02	[1]
MoO ₃	US Research Nanomaterials	20 nm	4.7	6	4.8	0.03	[2]
Ag sputter target	Kurt J. Lesker	15 nm	10.5	63	2	0.13	[3]
ITO on PET	Li Da tech.	-	-	-	-	5.0	[4]
Barrier substrate	Amcor	-	-	-	-	1.5	[5]

80% utilization factor for solution processing and 25% utilization for vacuum processing was assumed.

ZnO and MoO₃ nanoparticles dispersed in H₂O with 20 wt. % was used for cost estimation.

Order scale of 100~500g was assumed for ZnO and MoO₃, as monthly usage of 1500g is expected with production rate and materials usage.

Ag sputter target with highest volume available from the vendor was used for estimation.

Barrier substrate cost was cross referenced from a recent publication as the market cost was not readily available

2. Sensitivity chart

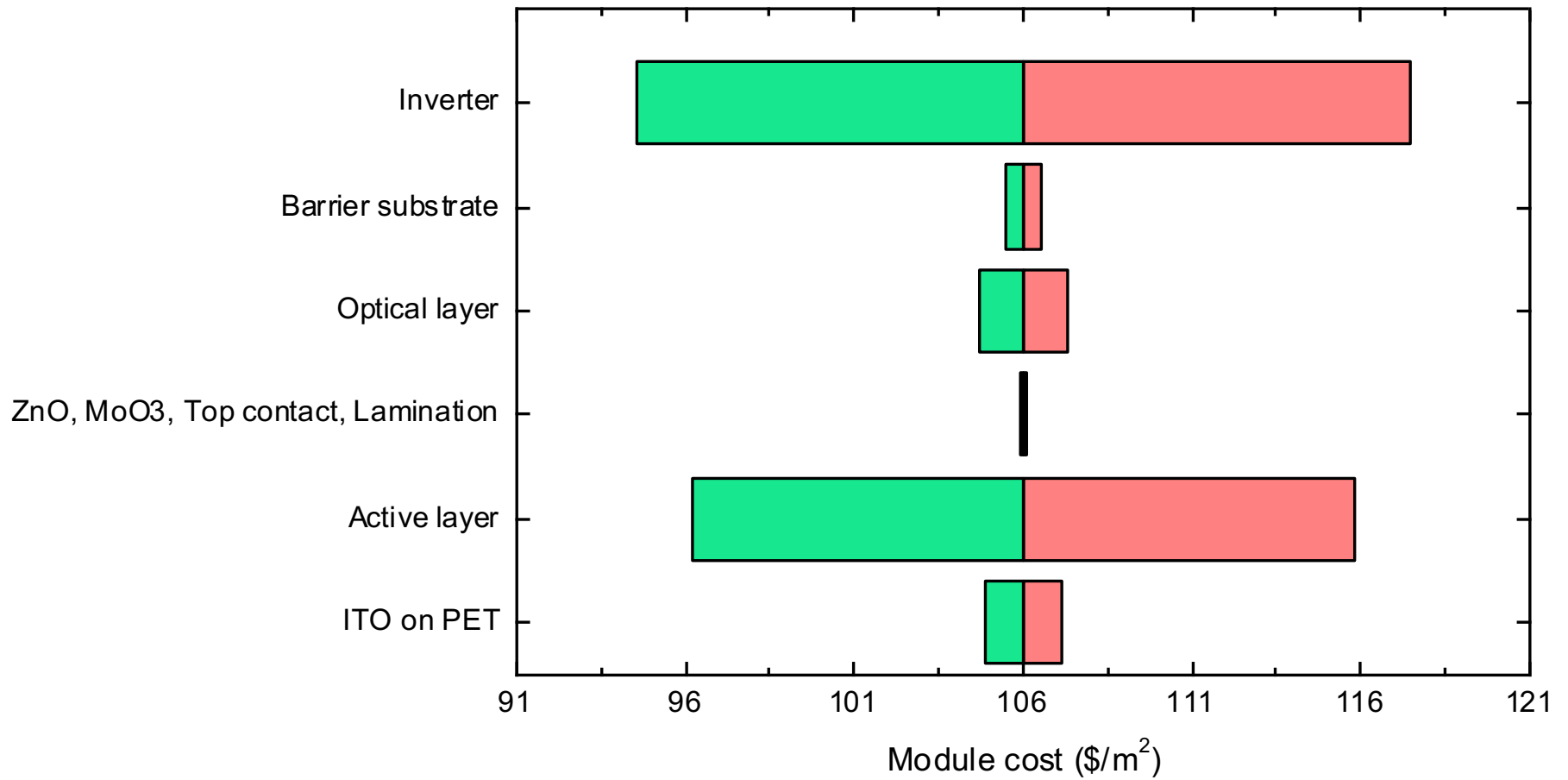


Figure 1. Cost sensitivity for different materials

Active layer and optical layer errors were estimated to be $\pm 30\%$, considering the limited data of bulk cost for active layer and orientation / installation dependence of optical layer. Errors for other items are estimated as $\pm 20\%$.

3. Proposed ST-OPV structure for the cost estimation

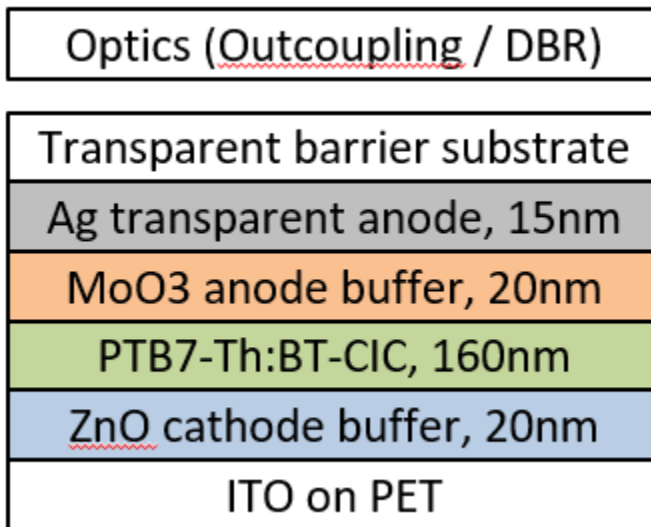


Figure 2. ST-OPV structure used for the cost estimation

References

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