<Supplementary Information>

Decorative power generating panels creating angle insensitive transmissive colors

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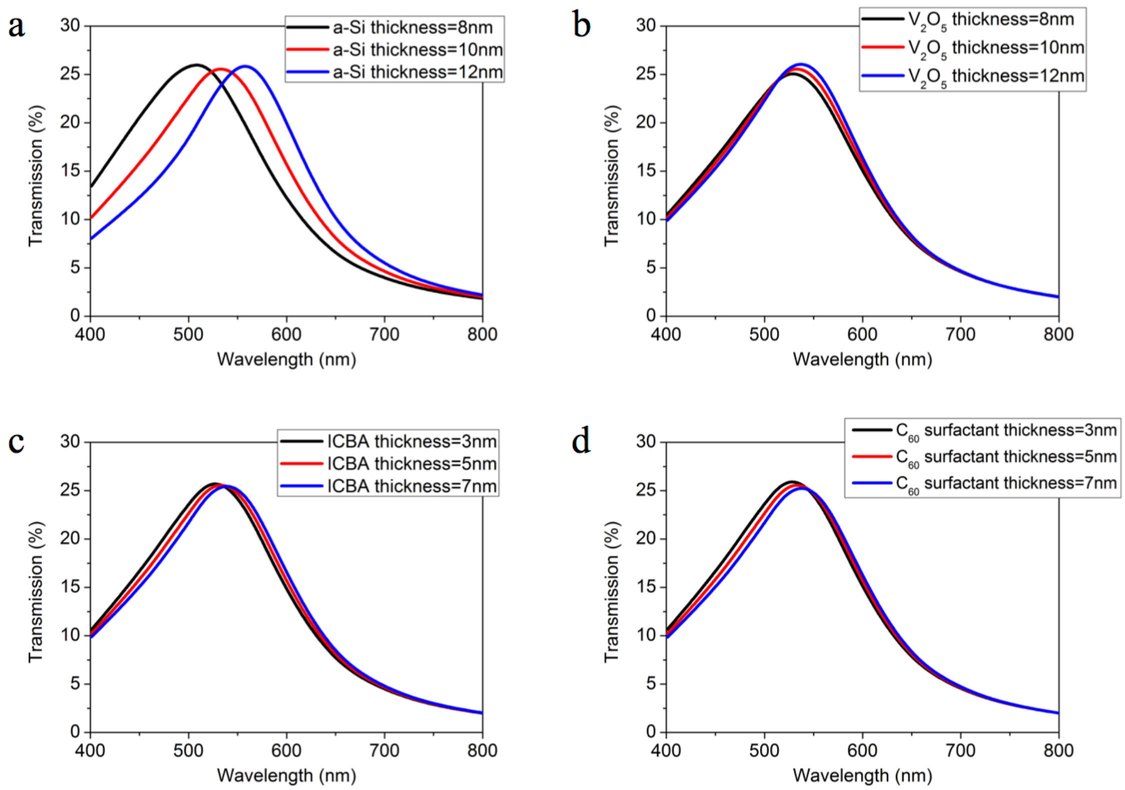

Figure S1 | Simulated transmission spectrum for different thickness of (a) a-Si layer (b) V_2O_5 layer (c) ICBA layer (d) C_{60} surfactant.

We studied the influence of thickness of each layer between the two highly reflecting surfaces on a resonance wavelength. Since the resonance is mainly determined by a cavity that consists of V_2O_5, a-Si, ICBA, and C_{60} surfactant, all of which are between the two Ag layers of both anode and cathode, these four layers are considered in the simulation. In Fig. S1a, the simulated transmission spectrum is illustrated with the three different a-Si thicknesses. Even with 2 nm change in the thickness of a-Si layer, ~25 nm of the resonance wavelength shift is observed. In contrast, the 2 nm thickness change of other layers (V_2O_5, ICBA, and C_{60} surfactant) shows ~5 nm of resonance wavelength shift that is much smaller than that obtained from a-Si thickness change. This is attributed to the high refractive index of a-Si layer as compared to those of other layers, which leads to a highly concentrated electric field distribution in a-Si layer.

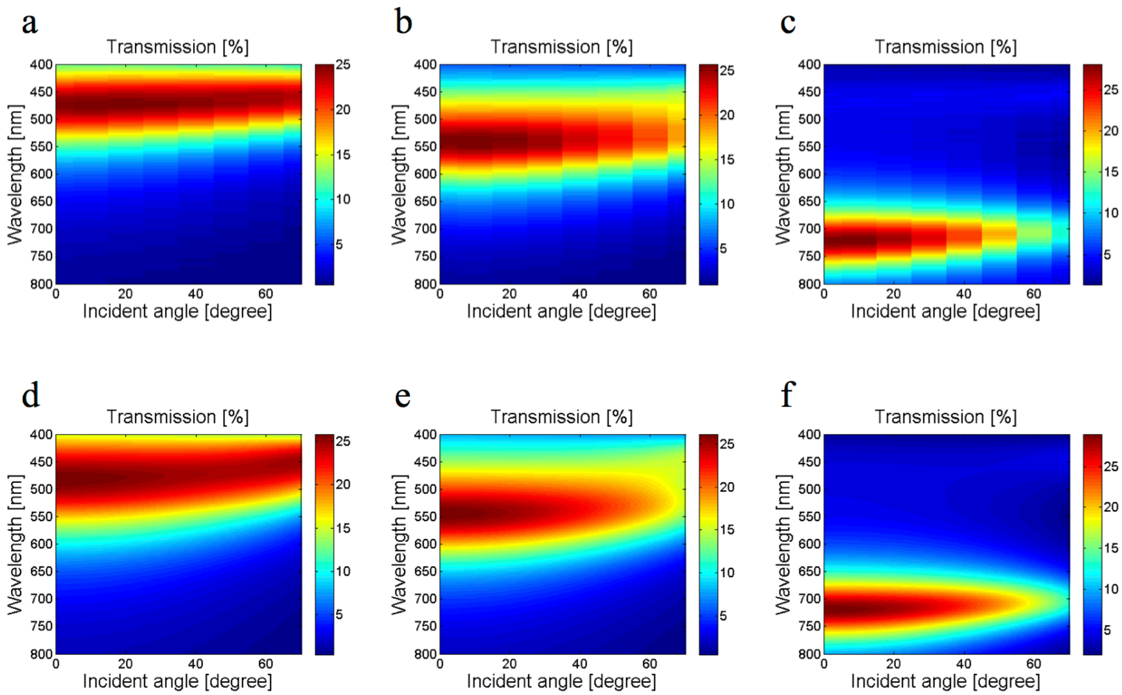

Figure S2 | Measured (a-c) and simulated (d-f) angle resolved transmission spectra for TE polarization.

Angular behavior of the proposed decorative power generating panels under the TE-polarized light illumination is shown in Fig. S2. The experimental dispersion curves (Fig. S2a-c) are attained by a spectrometer (HR4000CG, Ocean Optics) and the corresponding simulated curves are obtained (Fig. S2d-f) by a transfer matrix method for angles of incidence from 0° to 70°. In general, the simulated data are in a good agreement with the experiment results that show a relative wider bandwidth. This arises from the scattered light induced by non-smooth surfaces. The flat dispersion curves indicate that there is little resonance wavelength shift at oblique angle of incidence.

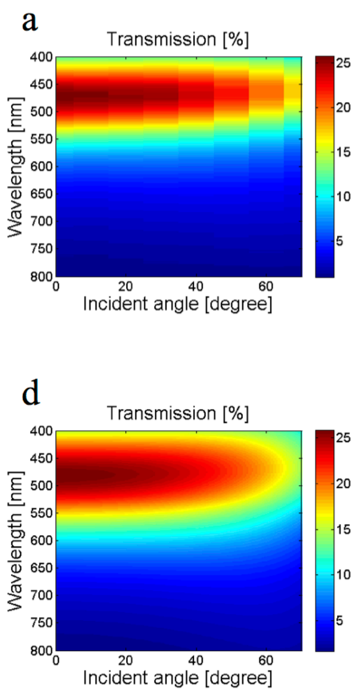

Figure S3 | Measured (a-c) and simulated (d-f) angle resolved transmission spectra for TM polarization.

Angular behavior of the proposed decorative power generating panels for TM polarization is also described in Fig. S3. This polarization independent characteristic is highly desired for solar cell applications as either sun or indoor light energy is unpolarized light source.

Table S1 | Summary of power conversion efficiency of each colored cell.

	Efficiency (%)	Jsc (mA/cm^2)	Voc (V)	FF (%)
Red device	**1.08**±0.02	**3.42**±0.09	**0.54**±0.01	**59**±0.88
Green device	**1.94**±0.10	**5.69**±0.18	**0.59**±0.01	**58**±1.95
Blue device	**0.73**±0.11	**3.54**±0.23	**0.48**±0.02	**43**±3.11