

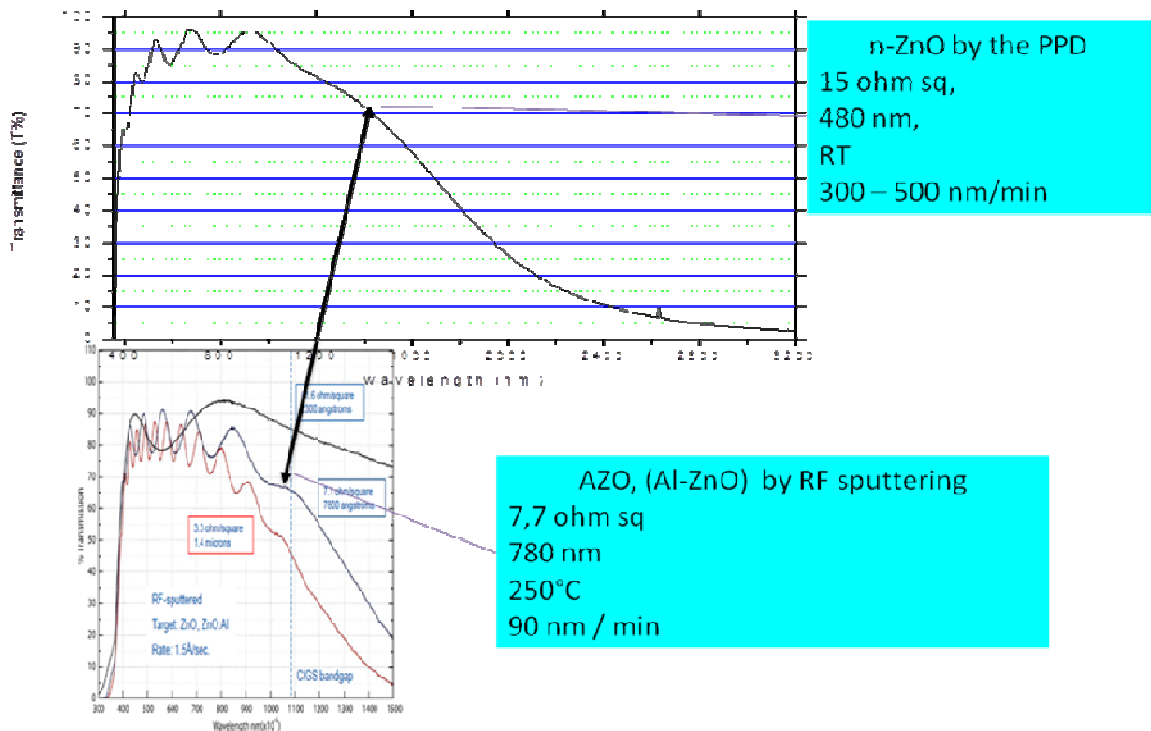
Zinc Oxide (n-ZnO) TCO

Organic Spintronics detains the proprietary IP of the PPD fabrication method at room temperature of n-doped ZnO thin films for plastic electronics and optoelectronics.

Doping is obtained by oxygen vacancies rather than substitution as in the case of sputtering (i.e. AZO). The room temperature process allows depositing ZnO films on the most industrially appealing plastic substrates such as PET. The sheet resistance is as low as 10 Ω squares for few hundreds of nm thick, while optical transmittance is larger than 90% in a wide VIS near IR spectral range

as shown in Fig. 1. The overall characteristics are markedly superior to the conventional AZO coated plastics as shown in Fig. 3 and enable the fabrication of much more efficient organic photovoltaic (OPV). Typical characteristics are:

Temperature °C	Transmittance T%	Resistivity mΩ-cm	Sheet resistance (100-400nm thick) Ω /□	Roughness nm r.m.s.	Deposition rate Gun III (20Hz) nm/min	Deposition rate Gun IV (100Hz) nm/min
Room Temperature	90	0.5	10-40	4.2 ± 0.7	3-4	500
200	Up to 90	0.4	10-40	3.2 ± 0.6	3-4	500



NB: same wavelength scale

Fig. 1 UV-VIS and NIR Transmittance (T%) of ZnO by PPD (top figure). The lower figure shows the transmittance of a commercial AZO deposited on polycarbonate by sputtering.