

Fig.1 SEM image

Indium Oxide (In_2O_3) doped by oxygen vacancies is a transparent conducting oxide (TCO) with superior optical transmittance and electrical resistivity compared to indium tin oxide (ITO). In the area of transparent conducting oxides there is a strong need of more performing materials for the display and photovoltaic (PV) applications. The Pulsed Plasma Deposition (PPD) technique developed by Organic Spintronics allows obtaining excellent thin films at room temperature with the best properties compared to traditional deposition methods. The AFM image is show in the inset.

Enhanced transmittance of In_2O_3 in the VIS and in the NIR spectral ranges allows the PV cell to gather a much wider spectrum of the solar emission compared to commercial ITO. In particular the proprietary low temperature deposition method developed by Organic Spintronics allows depositing In_2O_3 on plastic substrates such as PET, PEN etc.

Typical parameters of the In_2O_3 thin film obtained by PPD are the following:

Temperature °C	Transmittance In VIS-near IR T%	Resistivity mΩ·cm	Sheet resistance Ω /□ (200nm)	Roughness nm r.m.s.	Deposition rate Gun III @10Hz nm/min	Deposition rate Gun IV @100Hz nm/min	Substrate
RT	90	0.2	10	5 ± 1	8	200	PET Soft materials Glass

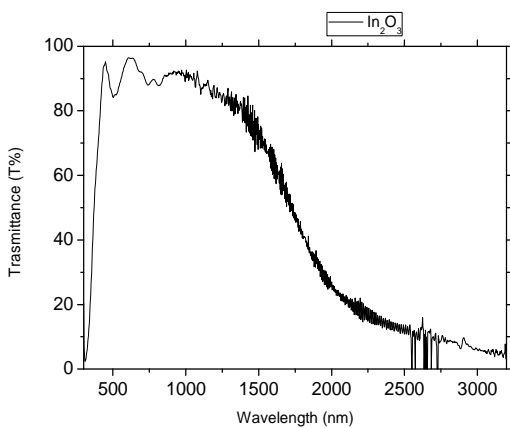


Fig. 2 Transmittance of In_2O_3 on PET.

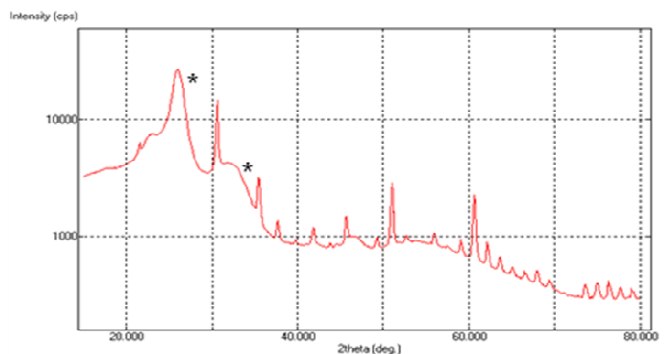


Fig. 3 X ray diffraction In_2O_3 grown on PET at Room Temperature.