

### Dye Sensitised Solar Cell (DSSC) fabrication process:

- Fluorine doped Tin Oxide (FTO) coated glass substrates are washed with detergent (Helmanex 5% in DI water) and sonicated for 15 minutes, rinsed in DI water, and followed by 2 minutes sonication in each of DI water, Acetone, and Isopropyl alcohol before drying in N<sub>2</sub> stream.
- Substrates were then plasma cleaned for 10 minutes in an O<sub>2</sub> plasma to remove any organic material and improve wettability.
- A nano-porous titania layer is deposited on the FTO by screen printing or doctor-blading before sintering in an oven or hotplate at 450 degrees centigrade. The sintered nano-porous titania is then dyed by over-night emersion in ruthenium dye (Ruthenizer 535-bis TBA from Solaronix) solution.
- Excess dye is rinsed off with ethanol before the substrate is dried in a N<sub>2</sub> stream.
- The top plate has filling holes drilled before the plate is cleaned, as above, in preparation for quasi-transparent layer of activated platinum deposition Platisol T (Solaronix) by spin coating. The top plate is then dried on a hot plate.
- In the final stages of DSSC fabrication, a sealing gasket laser cut from 60 µm thick thermoplastic Surlyn® is sandwiched between the two plates and pressed together at ~120 degrees centigrade for 30 seconds. The cavity formed between the top plate and dye-sensitized substrate is filled with iodide/tri-iodide electrolyte by capillary action before the filling holes are sealed.

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