

SOLARPRINT

INDUSTRY PROBLEM STATEMENT

There is an urgent need for alternative energy resources due to the rapid rise in the price of fossil fuels and the great danger of increasing greenhouse effect caused by carbon dioxide emissions. SolarPrint Ltd in Dublin has developed and patented technologies which can produce energy, not just from the sun, but from any internal light source in a building. Specifically, the company develops dye sensitised solar cell (DSSC) technology – the next generation of photo-voltaic technology – which involves the production of cost effective power-generating solar cells that can be printed and applied to a range of different surfaces. One of the key challenges during development is in the materials selection and processing method to achieve high cells energy conversion efficiency i.e. in maximising power output of the indoor DSSC product in a scalable way.

CRANN VALUE ADD

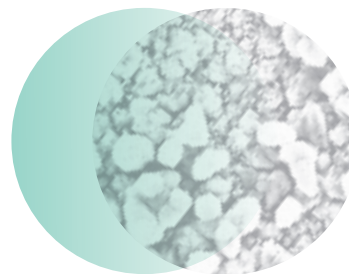
CRANN's infrastructure and leading expertise in advanced microscopy techniques helps SolarPrint to gain in-depth characterisation of the structural and compositional features of the DSSC cell. An understanding of the energy loss mechanism in terms of responsible microstructural and compositional features of the cell was essential in order to direct further development of this technology to maximise power output. CRANN characterised cells manufactured via different processes using a range of advanced microscopy techniques. Access to CRANN's Helium-ion microscope, of which there are less than twenty in the world, was instrumental in understanding the interfaces and physical structure of the cell. In this programme, working in close cooperation with SolarPrint design engineers, the structural and compositional variations responsible for energy loss mechanisms were identified. SolarPrint used the information gained from the project to optimise and modify their cell design and manufacturing process. IP following on from these programmes will strengthen their IP portfolio.

CRITICAL CRANN ENABLERS

- Sourcing of skilled research graduates.
- Leading expertise on-site in CRANN in advanced microscopy techniques.
- Access to the Advanced Microscopy Laboratory particularly the Helium Ion Microscope.

TYPE OF ENGAGEMENT

This project was funded by the IRCSET (Irish Research Council for Science, Engineering and Technology) Enterprise Partnership Scheme. IRCSET provides industry with flexible and easy access to an exceptional pool of competitively selected, high calibre researchers and funding for up to 70% of the project costs.



“SolarPrint has developed a strong relationship with CRANN over the last 3 years and have identified CRANN as a key partner with the infrastructure, advanced characterisation tools and know-how available to support us in the development of our Dye-Sensitised Solar Cells (DSSC)”

Dr. Mazhar Bari, CTO, Solarprint



