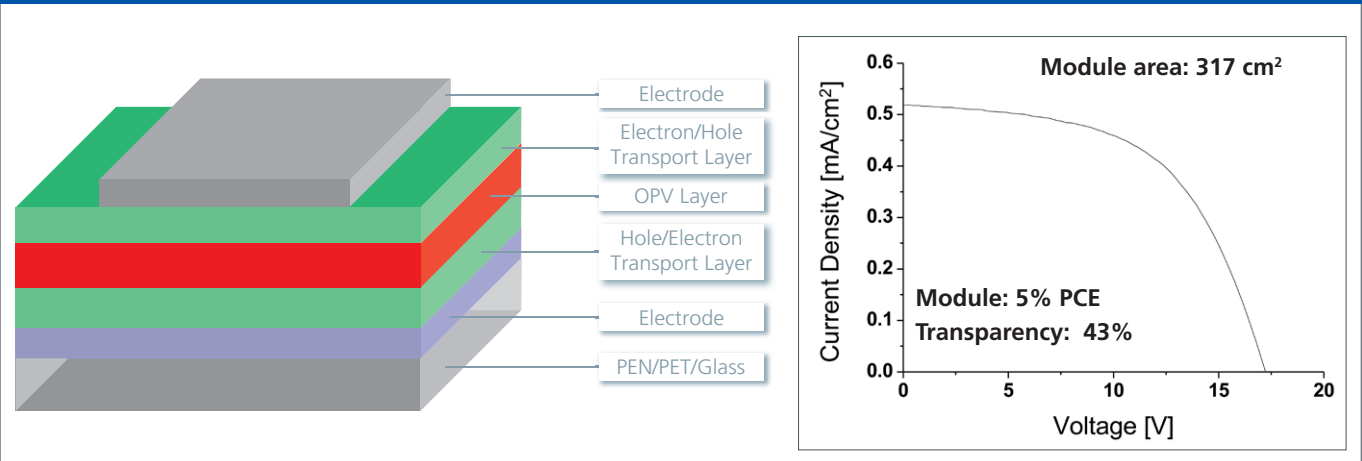


Organic Photovoltaics

BIPV – Building-integrated Photovoltaics

- CDT and Sumitomo Chemical are developing materials and processes for semi-transparent and coloured photovoltaic modules compatible with natural lighting.
- Photovoltaic cell performances demonstrated below for material SPV001 (with fullerene acceptor material):

SPV001 module structure and performance data (semi-transparent)



Advantages of Integrating Organic Photovoltaics into Building Fabric

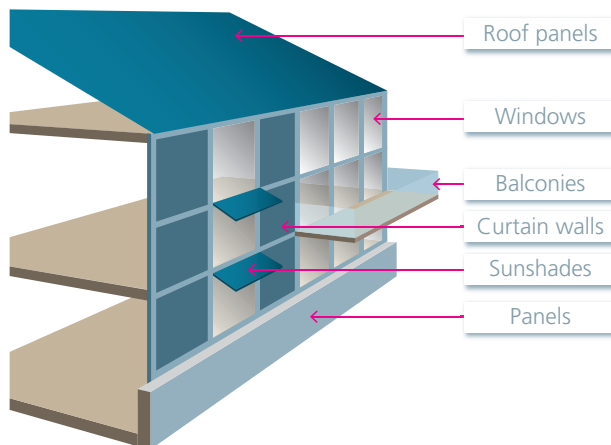
- Help achieve European Efficiency Directive targets.
- OPV's flexibility enables architects to integrate the technology into new buildings design.
- Multifunctional BIPV may additionally provide UV, heat (IR) and sound insulation.
- Technology also applicable for transparent windows, atriums, car sunroofs, curved surfaces.

Advantages for BIPV

Integration of OPV panels into building structure – only marginal additional cost in installation.

OPVs are thin and lightweight, flexible and conformable and offer excellent form factor.

Solar energy can be generated in spaces other than rooftops such as windows, doors and atria



Performance advantage over Si

Relative performance of OPV improves at shallow angles of incidence.

Delivers power even in low diffuse light conditions - suitable for south, east and west facing walls/windows.

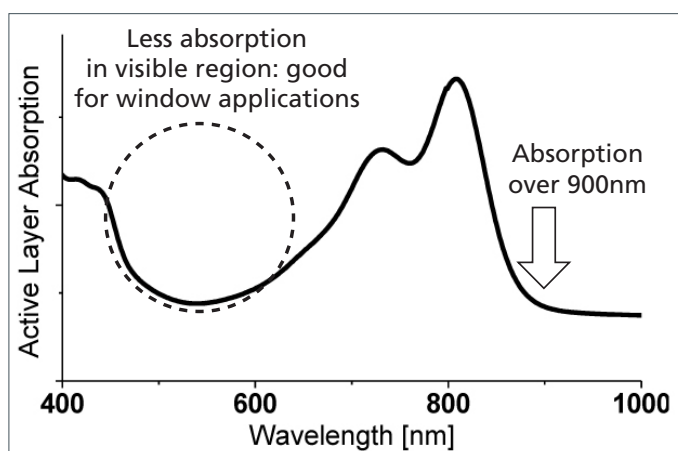
Delivers consistent power at higher temperatures – no need for ventilation.

Organic Photovoltaics

Semi-transparent and variable transmission OPV

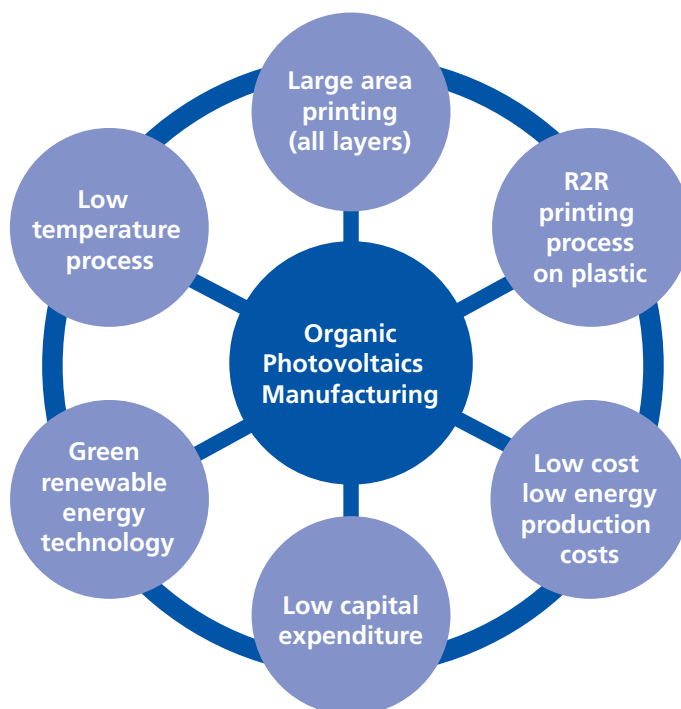
- SPV001 polymer from SCC has low absorption in the visible wavelengths, allowing enhanced transparency compared with other materials – the most optically transmissive polymer in the market.
- Transmission can be controlled and matched for a given application, as shown for BIPV windows below to suit application aesthetic and design.

▶ Semi-transparent OPV and Variable Transmission Modules



Manufacturing Process Developments

- Module development to enable large area, R2R processes for low cost and high throughput:
 - Large area printing techniques
 - Low temperature process
 - All materials are solution processable
- Durability testing at all stages of development to ensure long lifetime of the modules.
- Optimization of charge extraction layers and transparent electrodes for most favourable performance and processing on R2R manufacturing line.



Contact us to discuss opportunities for module or materials supply.