National Centre for Flexible Electronics

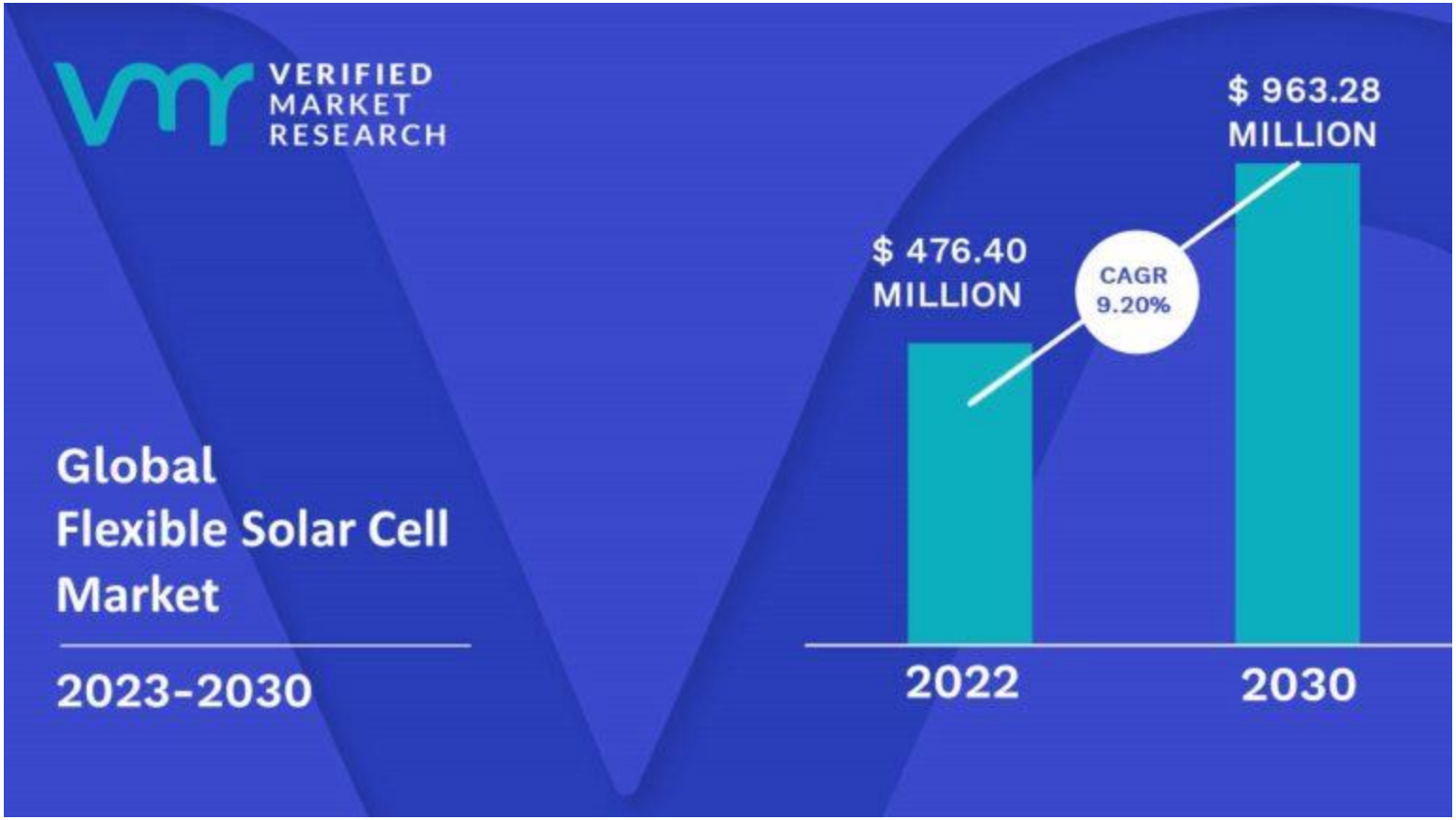
Call for

Expression of Interest

Solar Cells on Flexible Substrate

24th September 2015

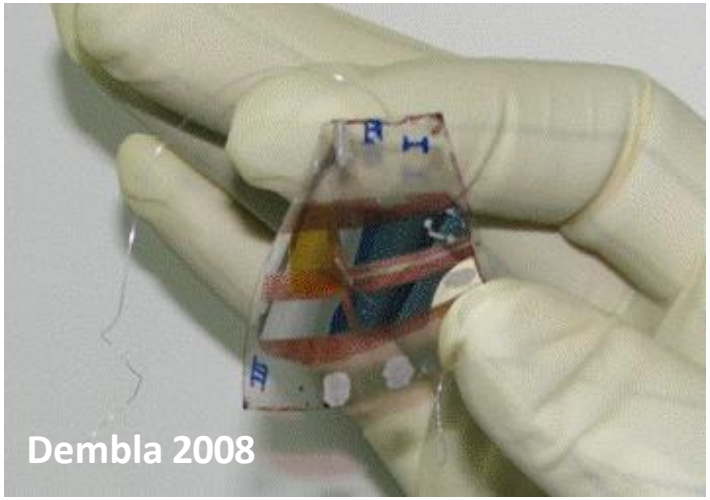
Market Size and Potential



https://www.verifiedmarketresearch.com/product/flexible-solar-cell-market/

Flexible PV is a disruptive technology that can create new applications and markets well beyond what is visualized today

Advantages of Flexible Solar Solution



- Light weight substrates
- Flexible substrates
- Monolithic integration with electronics on flexible substrates

Potential for

- High throughput production
- Large volume production
- Low cost devices & fabrication

Solar Cells on Flexible Substrates

Panels shown deployed in picture above are from UNI SOLAR, INC.

Application of FlexPV

- Potential exists for creating unique markets through flexible photovoltaic technologies, especially in off-grid or unstable grid areas.

Flexible PV may be used for powering Irrigation pumps in rural areas.

Flexible PV modules on parking lot canopy: Konarka Technologies, Inc.

- Flexible Photovoltaic technology can provide solutions to bridge the energy access gap and is especially suitable for lightweight, conformal and distributed power generation sources.

Potential Deployment

Rooftop Solar

IIT Kanpur

Agricultural fields and pastures

www.solarquotes.com.au/blog/bifacial-panels-solar-farms/

Part of green house roof

www.energyforum.in/fileadmin/user_upload/india/media_elements/Events/20210917_AgriPV_REI/01_Herrero_SPE.pdf

Noise barriers
(on the sides of highways)

3 kW pilot noise barrier in Gyeryong, South Korea by Korea Institute of Energy Research (KIER) Daejong (www.pv-magazine.com)

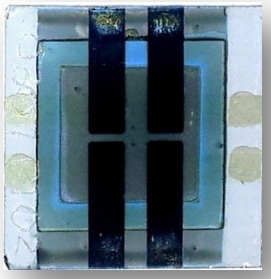
And many other places
…

Consumer Electronics Applications

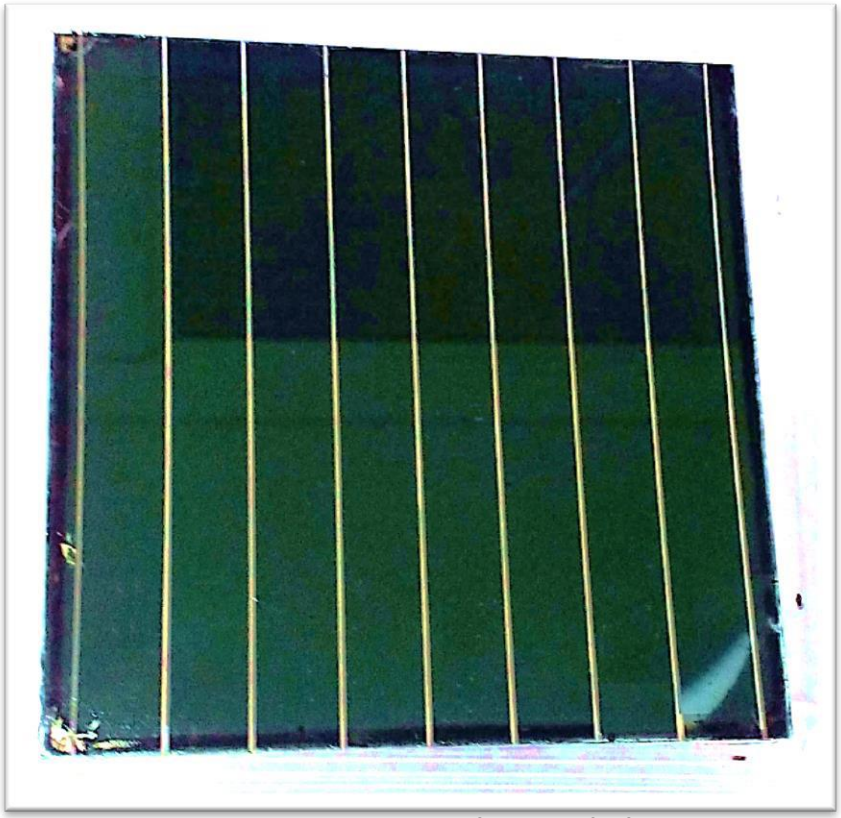
Powering small motors, LEDs and other devices in Innovative consumer products

Powering up portable appliances

From Cell to Sub-Module



~ 2 mm x 2 mm cells



10 cm x 10 cm sub module

Cell efficiency ~ 6.5% and module active area efficiency ~ 4%

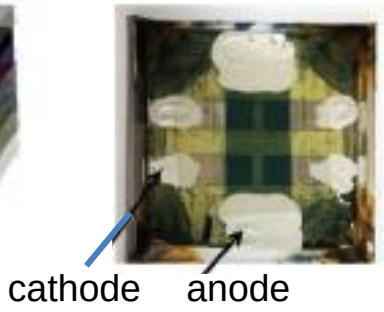
Goal: > 5 years life , > 5% efficiency

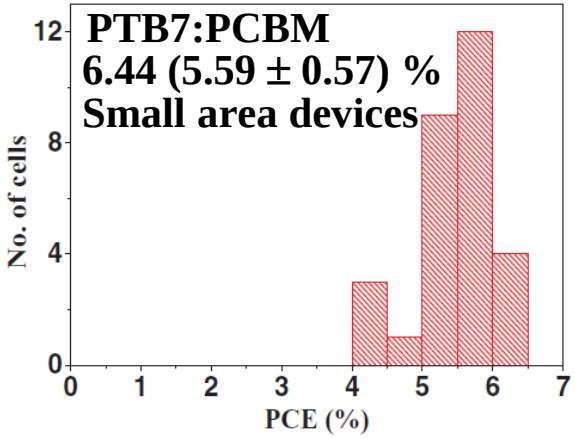
Substrate: glass, plastic, steel or paper

Flexible Solar Cells on Paper Substrates

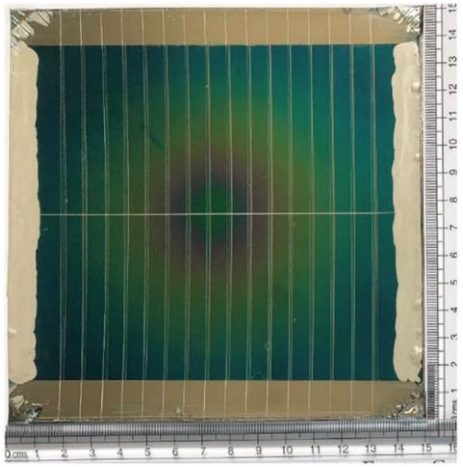
Device Structure

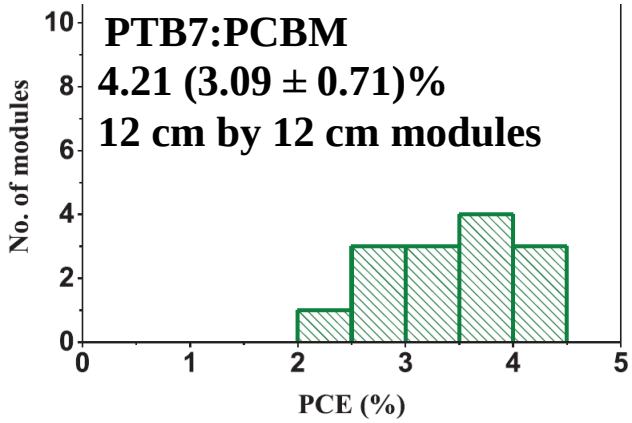
Small area devices





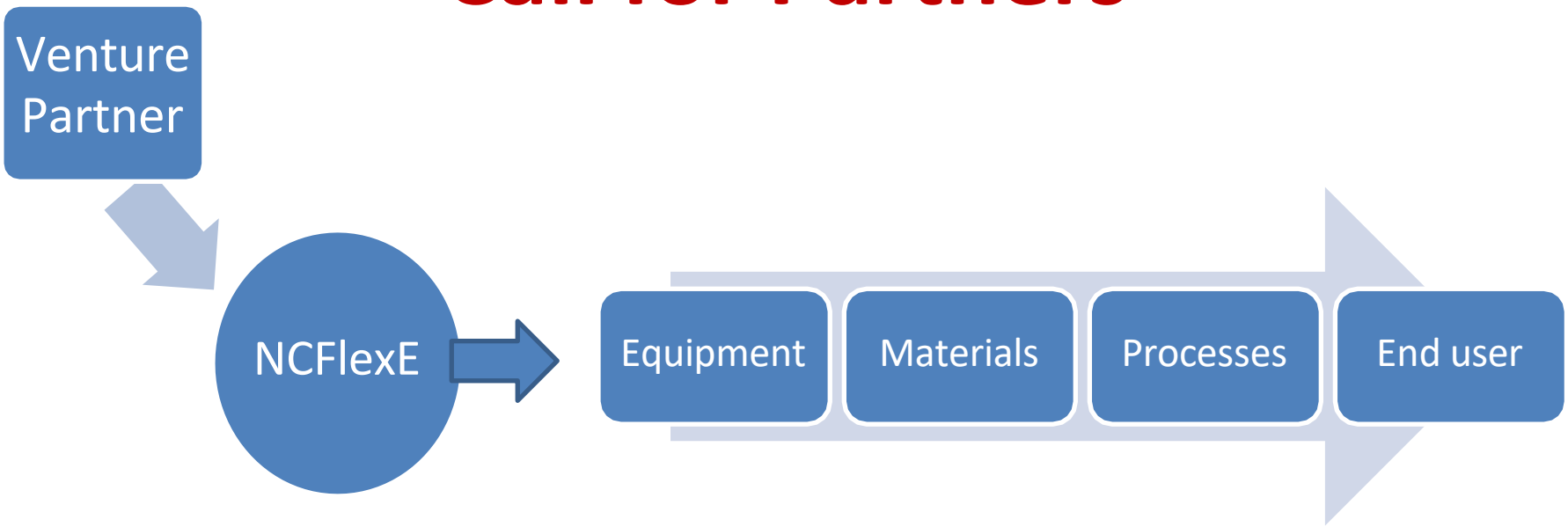
12 cm by 12 cm module





- Highest reported efficiency of organic solar cells & modules on paper substrates
- Attractive and competitive for indoor application of PV
- Printing process for organic solar cells being developed
- Eco-friendly molecules being identified for “green” solar modules

Call for Partners



- ✓We are seeking partners across the value chain shown above
- ✓We are looking for partners to enable the scaling and manufacturability of the developed processes
- ✓Preferential terms for early partners

Contact Information

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Also visit our webpage for more details on partnership models and other technology domains: www.ncflexe.in