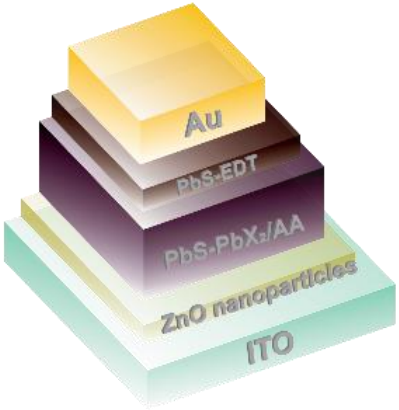
QDot™ PbS Quantum Dots for Solar Cell

QDot™ PbS QDs can be utilized in solar cell to capture more solar spectrum in the near infrared range. The ability to tune QDs absorbance wavelength in the NIR range makes it versatile for tandem solar cells with other materials such as silicon wafer or perovskite films solar cell. Current development of stand-alone PbS solar cell already achieved 10% certified efficiencies.

BENEFITS:

- Broad tunable absorption in near infrared range from 700 to 2000 nm
- Enable solution and room temperature processable solar cell
- Can be tandem with other solar cell technology such as silicon or perovskite solar cell, adding up to 5% to the total power conversion efficiency.



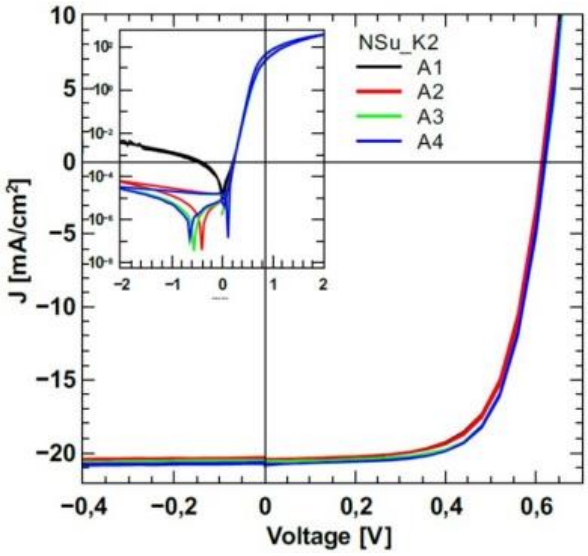
PERFORMANCE:

Material	QDot™ PbS Quantum Dots
Absorption range	Through all visible up to NIR (tunable from 700 nm to 2000 nm)
Particle sizes	From 2 to 10 nm depending on the required absorption profile
Devices typical PCE	8-9 % upon excitation in NIR

DEVICE EXAMPLE:

QDot™ PbS QDs with absorption 920 nm were used as an active layer in the solar cell with gold electrodes and ZnO electron transporting layer. QDot™ PbS QDs treated with PbI2/PbBr2 and ammonium acetate were deposited by spin coating as an active layer. For hole transporting layer, layer processing consisted of ligands exchanged QDot™ PbS QDs with 1,2-EDT was used.

The device absorbs the light through all visible spectra up to NIR light (tunable from 700 – 2000 nm). The obtained solar cell using our PbS QDs show promising power conversion efficiencies up to 8.77%.



Measurement	Jsc	Voc	FF	PCE	Area
A-1	20.66	0.62	0.66	8.45	0.10
A-2	20.54	0.61	0.67	8.45	0.10
A-3	20.68	0.62	0.68	8.69	0.10
A-4	20.88	0.62	0.68	8.77	0.10

Products portfolio:

- **QDot™ PbS Quantum Dots**

PbS Quantum Dots, oleic acid capped, 700-2000 nm emission/excitonic absorption peaks

qdot.inc info@qdot.inc +44 7389826941

Quantum SOLUTIONS™