

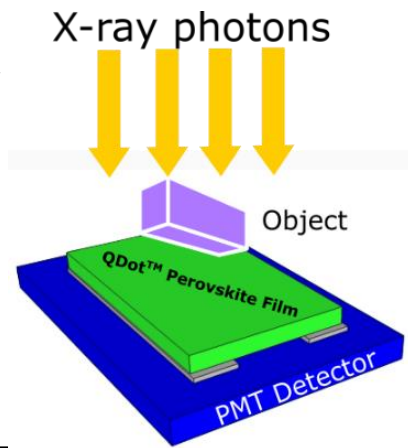


Perovskite Quantum Dots for X-Rays

Scintillators, which are capable of converting ionizing radiation into visible photons, are very important for such areas as: inspection, failure/cracks detection, security X-ray imaging, nuclear cameras, and computed tomography. QDot™ Perovskite Quantum Dots can be used as an efficient X-ray scintillation material. It exhibits strong luminescence (tunable in the range of 450-685 nm) under X-rays that is readable by the conventional silicon imaging camera. It is also compatible with PMT detectors, silicon photodiodes or photomultipliers.

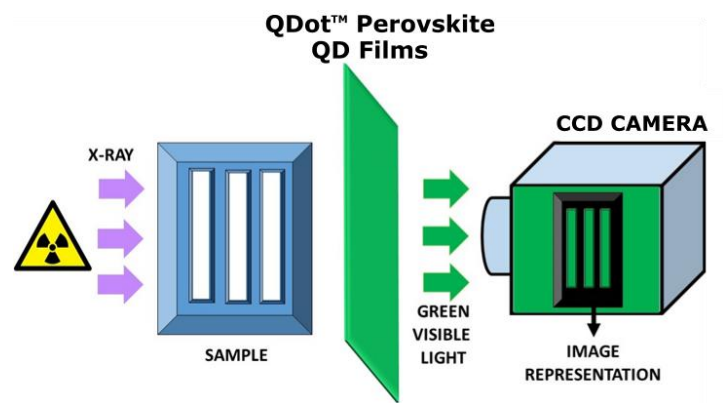
BENEFITS:

- High sensitivity (from 13 nGy/s)
- High light output (50 % of CsI:TI)
- Short decay time (40 ns)
- High stopping power
- Solution processable
- Enable flexible X-ray detector



DEVICE EXAMPLE:

QDot™ Perovskite QDs are a novel superior X-ray scintillator material with an exceptional sensitivity. The fast response to X-ray photons is critical especially in medical radiography and also industrial inspection.



PERFORMANCE:

QDot™ Perovskite Quantum Dots

| | |
|------------------------------------|--------------|
| Emission peak | 410 – 685 nm |
| FWHM | < 20-25 nm |
| Decay time under 661 keV | < 50 ns |
| Light output at 10kV (% of CsI:TI) | 50 % |
| Detection limit | 13 nGy/s |

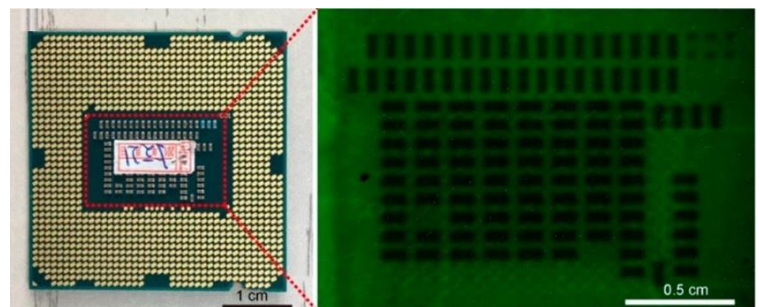
QDot™ Perovskite QDs as an X-ray scintillator can convert X-ray photons to visible light which can be easily detected by commercial available photodetector (CCD camera). Solution process ability and good compatibility with photodetector make it appealing for commercial application.

Products portfolio:

[QDot™ Perovskite ABX3 Quantum Dots](#)

[QDot™ SharpGreen Perovskite QDs](#)

[QDot™ SharpGreen Perovskite QDs Film](#)



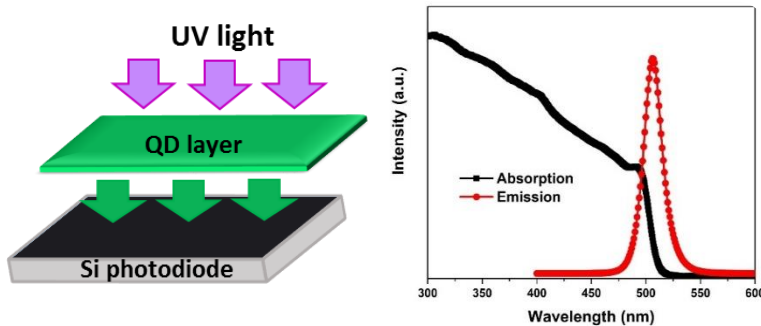


Perovskite Quantum Dots for UV Sensors

Silicon photodiode is the most widely used commercial photodetector for a broad range of applications, from imaging to light sensors. Unfortunately, it has low responsivity and suffer in capturing UV light range (< 400 nm), due to the low penetration depth of high energy UV photons in the silicon-based materials. QDot™ Perovskite Quantum Dots can be utilized as a color-converting layer to enhance the UV light sensitivity of Si-based photodetectors.

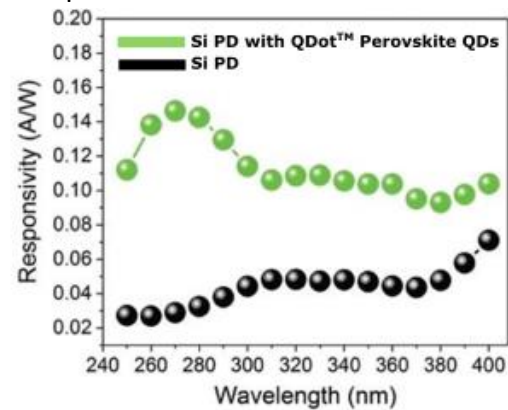
BENEFITS:

- High photo-conversion of UV light into visible light (PLQY up to 100 %)
- High absorption coefficient of UV light
- Tunable emission 410-685 nm



DEVICE EXAMPLE:

QDot™ Perovskite QDs can convert UV light into lower energy green light where Si-based photodetectors have a high sensitivity. QDot™ Perovskite QDs ABX3-510 can be used in the form of QDs in a polymer film or a spin coated layer on top of the Si-based photodetector.

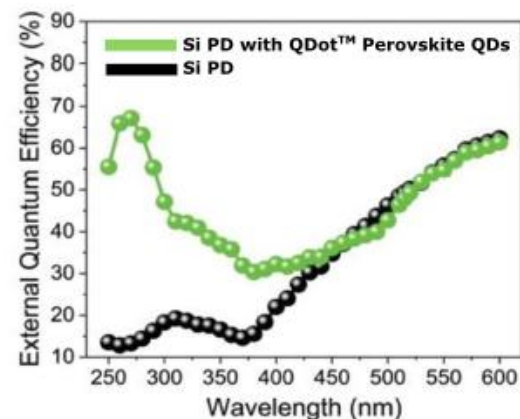


PERFORMANCE:

QDot™ Perovskite Quantum Dots

| | |
|---|-----------------|
| Emission | 410-685 nm |
| PLQY at UV light excitation | Up to 100 % |
| FWHM | < 20-35 nm |
| UV light absorption range | 100-400 nm |
| PL decay time (372 nm) | 4.5 ns |
| Responsivity improvement in Si-PD with QDot™ Perovskite QDs | 10^2 - 10^3 |

By utilizing only very thin layer of QDot™ Perovskite QDs on top of Si-based photodetector, the responsivity of the devices increases in response to UV light, without scarifying the response to the the visible light.



Products portfolio:

[QDot™ Perovskite ABX3 Quantum Dots](#)

[QDot™ SharpGreen Perovskite QDs](#)

[QDot™ SharpGreen Perovskite QDs Film](#)