

Technical Data Sheet

QDot™ SharpGreen Perovskite QDs Polymer Film

Version 3.0

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Introduction and product highlights

QDot™ SharpGreen Perovskite QDs Film are a polymer composite with embedded QDot™ SharpGreen QDs. It is designed to be used in LCD backlighting units and sensor devices for X-rays and UV lights. QDot™ SharpGreen Film has green emission 520-535 nm (depending on the concentration), high PLQY (up to 80-100 %) and narrow FWHM (< 20-25 nm). Film has high reliability under heat, light and humidity. It retains > 70-80 % of initial photoluminescence within 1000 hours of exposing by heat (85 °C and blue light 10 mW/cm² exposure), high relative humidity (90 % RH at 60 °C) and high flux exposure (150 mW/cm²).

QDot™ SharpGreen Film offers the following advantages:

1. QD LCD backlighting film for higher color gamut displays with pink LEDs (> 90 % Rec 2020 coverage). Cadmium free, RoHS compliant (Pb content less 1000 ppm)
2. Next generation scintillation film for X-ray imagers or UV sensors
3. Bright green emission at 520-535 nm, narrow full width at half maximum (FWHM < 20-25 nm) and high photoluminescence quantum yield (PLQY up to 80-100 %), short PL lifetime < 10 ns
4. High reliability under heat, humidity and high flux, in compliance with display standards



QD displays backlighting

Enhances color gamut
for HDR displays



X-ray and UV sensors

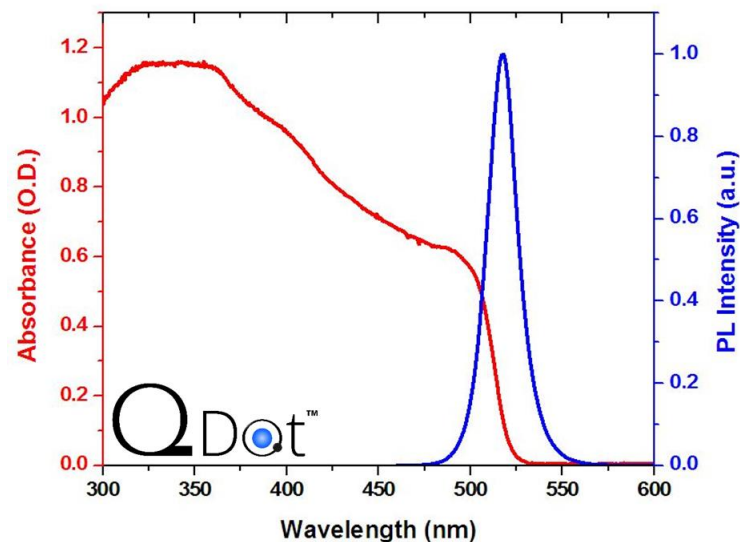
High-efficiency
scintillator material for
X-ray imagers and UV
sensors



Specification of QDot™ SharpGreen Perovskite QDs Film

Catalog Number	QDot™ SharpGreen Film LCD	QDot™ SharpGreen Film										
QDs Type	QDot™ SharpGreen Perovskite QDs											
Polymer	Polymer resins											
Appearance	Yellow-greenish films											
QDs concentration	RoHS compliant (Pb content < 1000 ppm)	Up to 50 wt.%										
Emission peak	520 ± 3 nm (standard) 525 ± 3 nm (upon request)	<table border="1"> <thead> <tr> <th>QDs wt. %</th> <th>0.5%</th> <th>5%</th> <th>10%</th> <th>50%</th> </tr> </thead> <tbody> <tr> <td>Em peak</td> <td>520 nm</td> <td>525 nm</td> <td>530 nm</td> <td>535 nm</td> </tr> </tbody> </table>	QDs wt. %	0.5%	5%	10%	50%	Em peak	520 nm	525 nm	530 nm	535 nm
QDs wt. %	0.5%	5%	10%	50%								
Em peak	520 nm	525 nm	530 nm	535 nm								
FWHM	≤ 25 nm	≤ 25 nm										
PLQY	> 80-90 %	> 70-90 %										
Film Sizes	Customized up to 15 cm x 15 cm											
Film thickness	Standard	Customized 100-500 μm										

Absorption and emission spectra

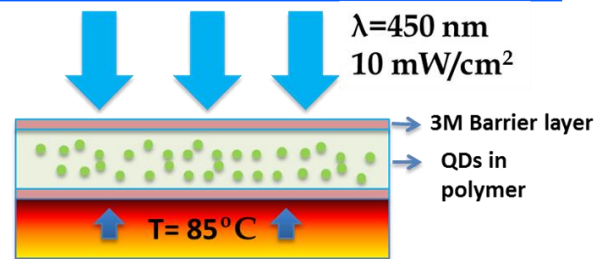


QDot™ SharpGreen Film structure

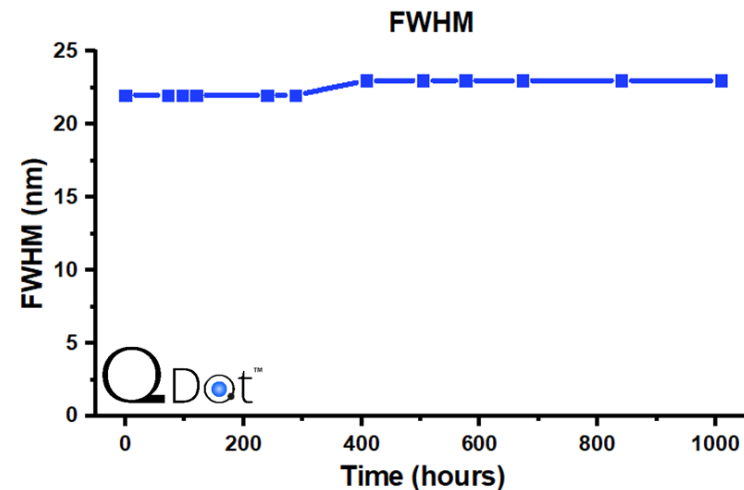
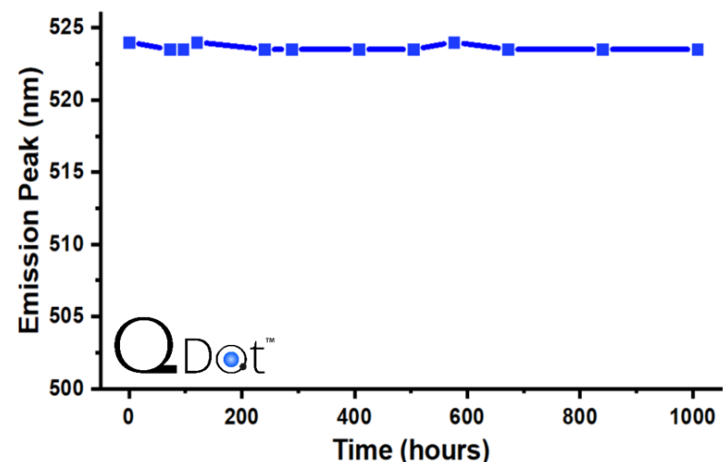
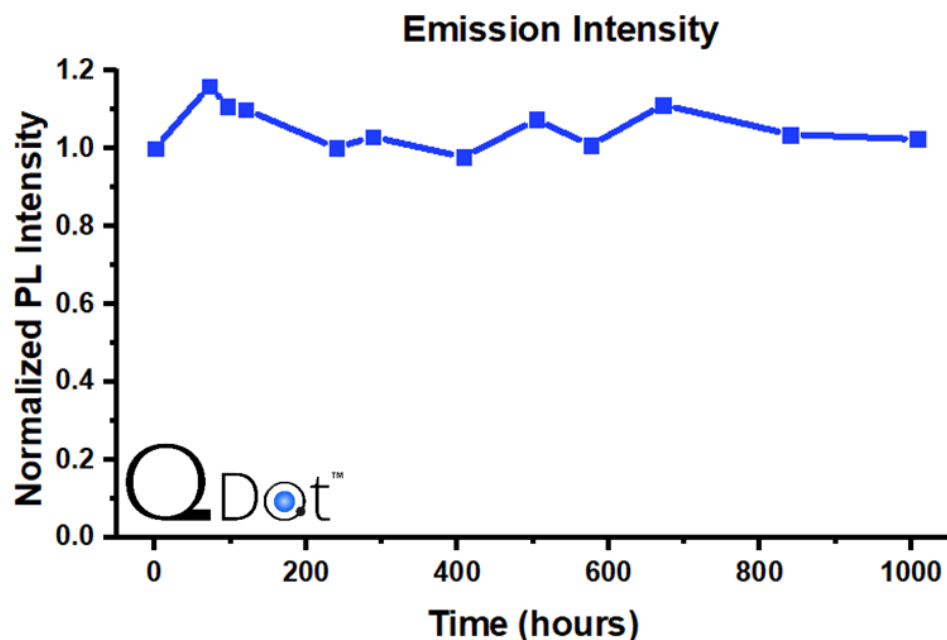


Heat reliability test of QDot™ SharpGreen Film LCD in air at 85 °C

QDot™ SharpGreen Film retains > 90 % of its initial PL intensity after 1000 hours of the tests at 85 °C. Film maintains its initial emission peak and its narrow FWHM.

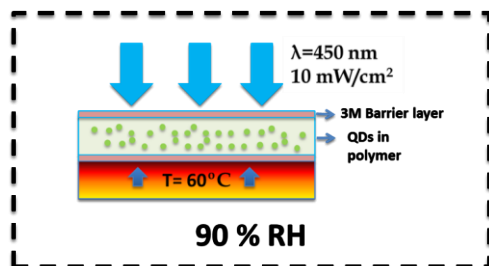


Emission Peak



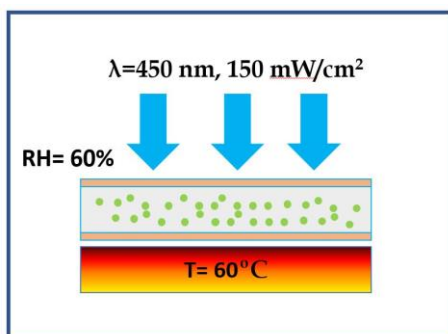
Humidity reliability test of QDot™ SharpGreen Film LCD at 90% RH

QDot™ SharpGreen Film retains > 80 % of its initial PL intensity after 1000 hours of the tests at 90 % relative humidity (RH).

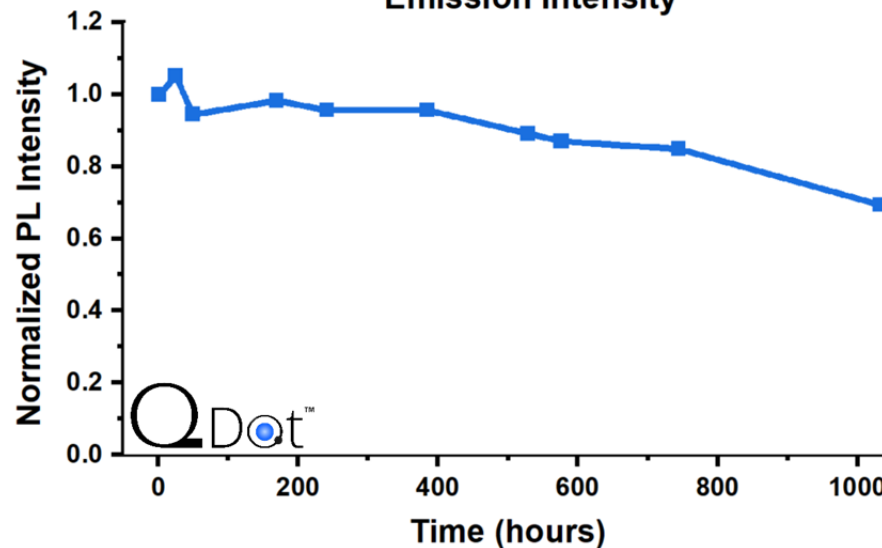
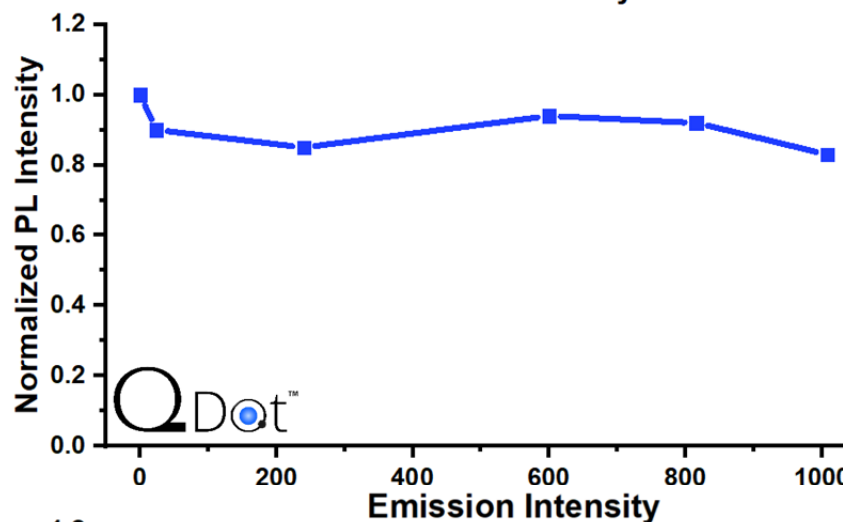


High flux reliability test of QDot™ SharpGreen Film LCD at 150 mW/cm² light

QDot™ SharpGreen Film retains > 70-80 % of its initial PL intensity after 1000 hours of the tests under 150 mW/cm² light exposure*.



Emission Intensity



*Relevant for some types of standard QDot™ SharpGreen Film LCD only, contact info@qdot.inc for more details

Notes for handling

Shelf Life 12 months. Suggest use within 6 months of purchase. Shipping temperature 2-25 °C. Store temperature 2-25 °C.

QUANTUM SOLUTIONS

1 Venture Road, Southampton Science Park, SO16 7NP, Southampton, UK

www.quantum-solutions.com

E-mail: info@quantum-solutions.com, Tel.: +44 73 89826941

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www.qdot.inc

Email: info@qdot.inc