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General handling and storage of water soluble quantum dots

This applies to the following core/shell quantum dots (QDs) with product catalog numbers:

QSH-carboxyl groups on the surface
QVH-AclaF™ QD with carboxyl groups
QYH-LyoF™ QD with carboxyl groups
QXH-endotoxin free QD with carboxyl groups
QSA-amine groups on the surface with PEG coating
QMG-no reactive groups on the surface and PEG coating
QSQ-PDDA coating
QBO-Phenylboronic acid conjugated

1. Storage

QSH can be stored at 4-25°C for at least 6 month without precipitation. Other QD should be stored at 4°C for 3 months. The storage time for QD-protein conjugates is dependent on the lifetime of proteins. Always store QDs in a plastic container.

***Do not freeze QDs without any cryoprotectant.

2. Autoclaving

For delicate experiments which require septic or DNase free conditions, QDs, including QSH, QSA, QMG, QSQ can be autoclaved at 121°C for 30 min, the common procedure to kill DNase and microorganisms.

3. Determination of QD concentration

The concentration of QD can be determined spectrophotometrically. Scan QD solution to locate the maximum absorption peak which is normally 10-15 nm lower than the emission wavelength. Follow the equation:

QD concentration (uM)=(OD_{first absorption peak}*-OD_{800nm}) x dilution x constant**

*OD_{500nm} for QSH665

**this constant is size dependent and is given in the following chart:

$E_m \lambda$ (nm)	constant
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665*	1.0
645	2.5
620	1.8
600	2.2
580	3.9
540	4.6
525	4.6
490	4.8
450	5

* Use OD_{500nm}

5. Colloidal stability in aqueous buffers

Please check the specification sheet of the individual products for colloidal stability in different aqueous buffers.

6. Stability in organic solvents

QSH is stable in DMSO

7. Gel electrophoresis

Gel electrophoresis is a convenient way to check the uniformity, size, and charge of QDs. It can also be used to monitor the conjugation process by comparing the conjugates with the original unconjugated QDs. Conjugation causes changes in size and surface charge causing changes in electrophoretic mobility. For detailed protocol of gel electrophoresis, please check our website:

<http://oceannanotech.com/upload/090604132955928413aza6sm.pdf>

8. Nanoparticle purification

Water soluble QDs can be purified by ultrafiltration (MWCO \leq 100K), dialysis (MWCO \leq 100K), ultracentrifugation.

YES! We do provide the conjugation service. For detailed information, please check our website: <http://oceannanotech.com/nav.php?qid=37>



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For sample application of nanoparticles, please visit our technical notes at:
<http://oceannanotech.com/nav.php?qid=49>

If you have more questions, please contact us at info@oceannanotech.com.