

# Quantum Dots

## Core-Type, Core-Shell and Alloyed Nanocrystals



For a complete list of different types of quantum dots available in

- aqueous and organic formulations
- emitting different colors
- high quantum yield

and detailed product information, including a list of availability in your country, visit

[aldrich.com/quantumdots](http://aldrich.com/quantumdots)

Quantum dots are semiconductor nanocrystals with particle dimensions in the range of 2–10 nm, exhibiting both photo- and electroluminescence properties. They can be fine-tuned to emit any color of light by simply changing the material's crystallite size.

Quantum dots can be used for LEDs and solid-state lighting, displays, photovoltaics, transistors, quantum computing, medical imaging, biosensors, among many others.

Our products can be classified into three major types.

**Core-Type Quantum Dots:** uniform, single-component materials, such as zinc or cadmium chalcogenides. Examples include:

- Lumidot™ CdS,  $\lambda_{em}$  380 nm, in toluene ([Prod. No. 662429](#))
- Lumidot™ CdSe,  $\lambda_{em}$  480 nm, in toluene ([Prod. No. 662356](#))
- Lumidot™ CdS-6, quantum dots kit,  $\lambda_{em}$  380–480 nm ([Prod. No. 662593](#))
- Lumidot™ CdSe-6, quantum dots kit,  $\lambda_{em}$  480–640 nm ([Prod. No. 662550](#))

**Core-Shell Quantum Dots:** two-component materials where the external shell improves quantum yield and stability of the nanocrystal. Examples include:

- CdSe/ZnS,  $\lambda_{em}$  485 nm, in toluene/aliphatic amine ([Prod. No. 731862](#))
- CdSe/ZnS,  $\lambda_{em}$  635 nm, in toluene/aliphatic amine ([Prod. No. 731870](#))

**Alloyed Quantum Dots:** multicomponent materials with gradient composition regions determining the optical and electronic properties of the nanocrystal. Examples include:

- CdS<sub>x</sub>Se<sub>1-x</sub>/ZnS,  $\lambda_{em}$  450 nm, 6 nm diameter, in toluene ([Prod. No. 753742](#))
- CdS<sub>x</sub>Se<sub>1-x</sub>/ZnS, carboxyl functionalized,  $\lambda_{em}$  525 nm, 6 nm diameter, in water ([Prod. No. 753831](#))
- CdS<sub>x</sub>Se<sub>1-x</sub>/ZnS-5 quantum dots kit,  $\lambda_{em}$  490–665 nm, 6 nm diameter, in toluene ([Prod. No. 753823](#))
- CdS<sub>x</sub>Se<sub>1-x</sub>/ZnS-5 quantum dots kit, carboxyl functionalized,  $\lambda_{em}$  490–655 nm, 6 nm diameter, in water ([Prod. No. 753904](#))