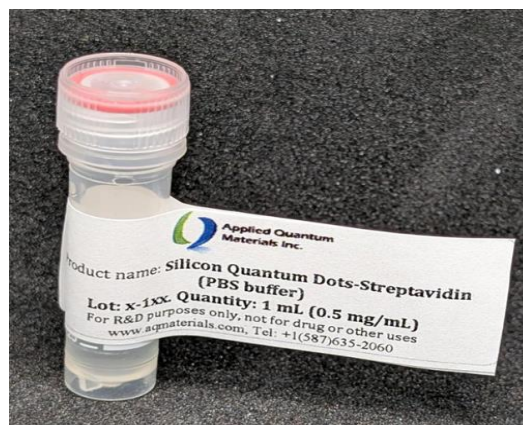


Silicon Quantum Dots Conjugated with Streptavidin

Silicon Quantum Dots conjugated with Streptavidin* dispersed in buffer solution

Description

SiQDs-Streptavidin is a water-soluble silicon quantum dot functionalized with streptavidin for strong, specific binding to biotinylated targets. These biocompatible SiQDs provide bright, stable photoluminescence and low toxicity, making them ideal for biosensing, imaging, and molecular detection applications.



Product Advantages

- Strong Biotin binding
- Heavy metal free (e.g., Cd, Pb) and low toxicity
- Bright and stable photoluminescence from 600 to 950 nm (visible to near-IR)
- Water-soluble and biocompatible
- Suitable for a wide range of bioassays (e.g., ELISA, bead conjugation, lateral-flow assays, and fluorescence-based detection)

Product Specifications

Related Categories	Biosensing, bioimaging probes, diagnostic & In vitro assays, multiplexed detection systems
Particle Sizes Available	From 2 nm to 5 nm
Material Composition	Silicon
Forms	Orange solutions
Typical concentrations	~ 1 mg/mL.
Photoluminescence	λ_{em} 600 to 950 nm
Zeta potential	-4 mV
Shelf Life	4 months ¹
Storage conditions	-20 °C
¹ Note: The shelf life is approximate and requires proper storage conditions. Materials improperly stored can oxidize and lose optical properties.	

Characterization Data

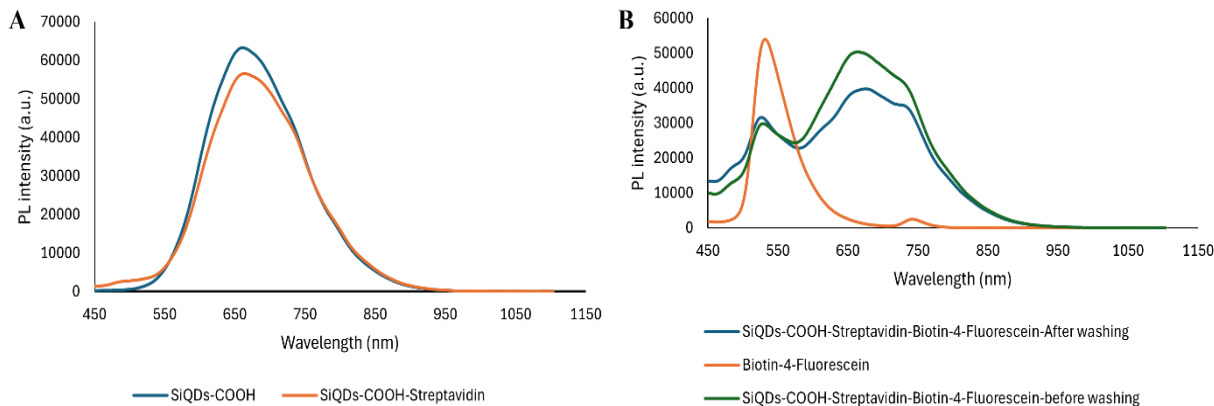


Figure 1: (A) Photoluminescent emission spectra for SiQDs-COOH before and after conjugation with Streptavidin ($\lambda_{ex} = 365 \text{ nm}$) (B) Photoluminescent emission spectra for SiQDs-COOH-Streptavidin-Biotin-4-Fluorescein (Biotin-binding assay)

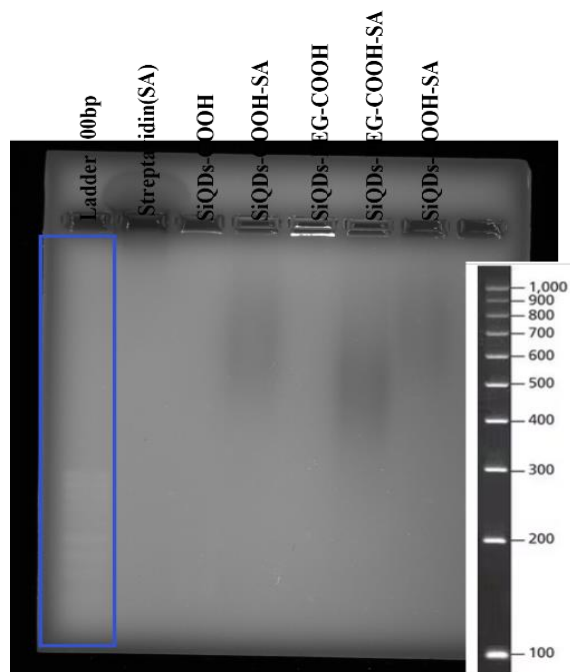


Figure 2: SDS-PAGE of Streptavidin, SiQDs before and after conjugation with Streptavidin

*Silicon Quantum Dots (SiQDs) can be efficiently conjugated with a range of streptavidin variants (native, recombinant, neutravidin, or monovalent), enabling robust and versatile biotin-mediated targeting. These options provide flexibility in controlling binding affinity, valency, and non-specific interactions. The resulting bioconjugates allow rapid and high-affinity binding to a wide range of biotinylated biomolecules, including antibodies, peptides, nucleic acids, and small molecules. Conjugation preserves both streptavidin functionality and SiQD photoluminescence. This platform supports applications in bioanalysis, diagnostics, and targeted imaging.

Packaging, Handling, and Shipping

Shipped in 1 mL and 5 mL solution in Eppendorf tubes.

Sonication can be used to help disperse the SiQDs-Streptavidin in the buffer of interest.

Shipping conditions: 4°C

[Contact us](#) for purchasing/customization options. AQM can tailor the surface chemistry to provide SiQDs suitable for specific applications.

References:

Ounkaew, et. al, "Biocompatible Water-Soluble Silicon Quantum Dots for Photodynamic Cancer Therapy", *ACS Applied Nano Materials*, 2025, Vol 8, Issue 42, 20397–20410