

Silicon Quantum Dots Conjugated with Aptamers

Silicon Quantum Dots conjugated with Aptamers* dispersed in buffer solution

Description

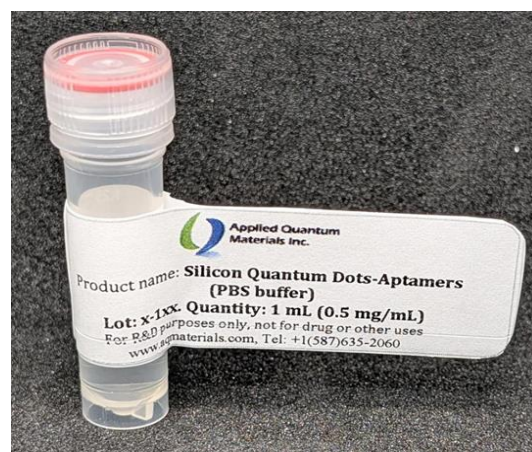
Silicon Quantum Dots (SiQDs) are functionalized with reactive surface groups that enable stable covalent attachment to DNA or RNA aptamers. Users may select from custom aptamer sequences tailored to specific proteins, cells, pathogens, biomarkers, or small molecules. The resulting SiQDs–Aptamer nanoprobe provides bright, tunable fluorescence (visible to NIR), exceptional biocompatibility, and high target specificity, making them ideal for imaging, biosensing, and diagnostic applications.

Product Advantages

- Custom Target Recognition
- Heavy metal free (e.g., Cd, Pb) and low toxicity
- High sensitivity and strong fluorescence
- Robust covalent conjugation
- Water dispersibility and biocompatibility

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	-11 mV
Shelf Life	3 months ¹
Storage conditions	4 °C (short-term use), -20°C (long-term use)
¹ Note: The shelf life is approximate and requires proper storage conditions. Materials improperly stored can oxidize and lose optical properties.	



Characterization Data

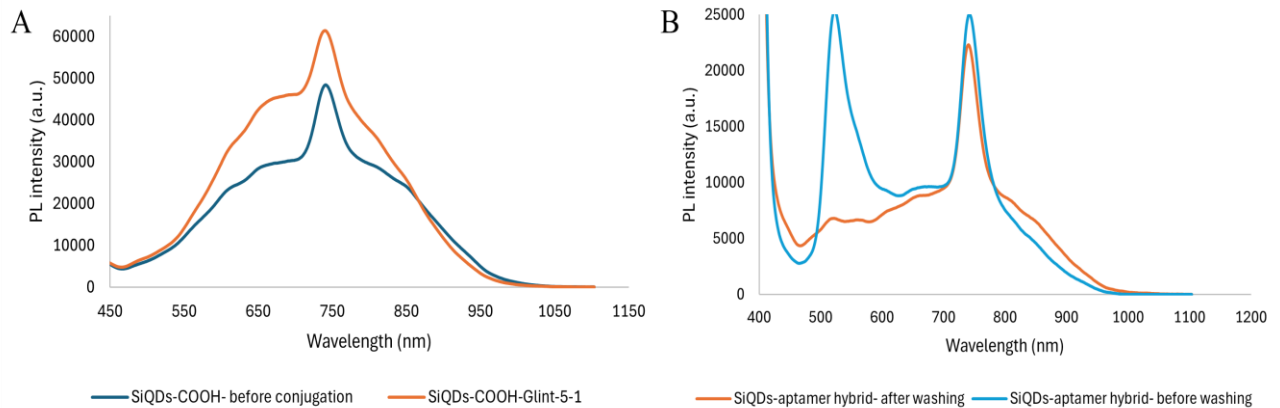


Figure 1: (A) Photoluminescent emission spectra for SiQDs-COOH before and after conjugation with an aptamer ($\lambda_{\text{ex}} = 365 \text{ nm}$) **(B)** Photoluminescent emission spectra for SiQDs-COOH-aptamer-hybrid aptamer (DNA-DNA hybridization)

* Silicon Quantum Dots (SiQDs) can be efficiently conjugated with a wide range of customizable aptamers, enabling highly specific and tunable target recognition. Both DNA and RNA aptamers can be designed and optimized for diverse targets, including proteins, small molecules, and cells. Conjugation ensures stable bioconjugates while preserving aptamer binding affinity and SiQD photoluminescence. This flexibility supports applications in bioanalysis, diagnostics, targeted imaging, and advanced biomedical research.

Packaging, Handling and Shipping

- Shipped in 1 mL, 5 mL, and 10 mL buffer solutions in Eppendorf Tubes.
- Water soluble SiQDs can be made upon request.
- Sonication can be used to help disperse the SiQDs-Aptamer in 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.