

Product Information

QSense® QSX 340 His-tag Capturing

Immobilizing molecules on a surface is a successful approach for label-free studies of biomolecular interactions. The QSense His-tag Capturing Sensor, enables immobilization of His-tagged recombinant proteins, since the poly-histidine tags display a high-affinity for the Cu^{2+} ions on the sensor surface.

- Suitable for His-tagged molecule of interest
- Maximum access to protein interaction site by controlled steric orientation
- Surface regeneration possible
- Applications include antibody optimization¹, protein-protein interactions² and probing of conformational changes

Recombinant proteins are often synthesized with an N-terminal or C-terminal hexa-histidine tag (His-tag) to aid in purification from the cell lysate. The His-tag can be used as a convenient and robust way of immobilizing the protein of interest in an oriented and functional manner on a sensor surface.

The QSense sensors are developed and produced to provide you with stable, reliable and reproducible data. Full performance is ensured through extensive quality controls and guaranteed for one-time use according to the recommendations.

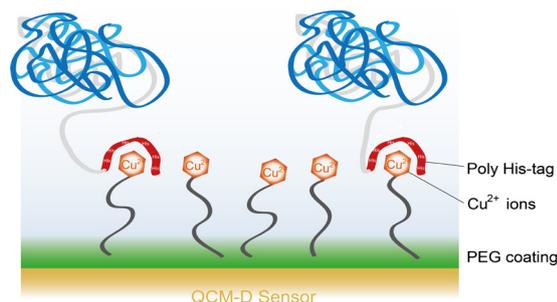


Figure 1. The QSense His-tag Capturing Sensor consists of chelated Cu^{2+} ions coupled to a passivating PEG background coating. Some areas of use include antibody optimization, protein-protein interactions and probing of conformational changes.

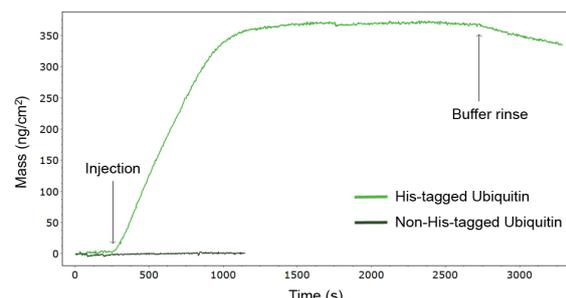


Figure 2. N-terminally His-tagged Ubiquitin ($0.6 \mu\text{M}$) was immobilized onto the His-tag Capturing Sensor. No binding was seen for non-His-tagged Ubiquitin. Further analysis of immobilized Ubiquitin was done by injection of an antibody for Ubiquitin (not shown here).

Sensor specifications

Description	His-tag capturing sensor
Surface chemistry	Polyethylene glycol(PEG) 3 nm coating and functionalization with a 10^{13} - $10^{14}/\text{cm}^2$ density of Cu^{2+} ions.
Sensor surface base	SiO_2
Binding	The Poly-histidine tag displays a high affinity for M^{2+} ions such as Cu^{2+} . The binding can be reversed by injection of EDTA or Imidazole.
Specificity	The zero-background PEG coating eliminates non-specific binding.
Usage	Direct mounting into the instrument from the box without prior cleaning.
Storage	Store in original vacuum-bag at -20 to $-80 \text{ }^\circ\text{C}$. Opened sensors should be stored in vacuum desiccator or in 100% nitrogen environment. Note that the sensors can be shipped in room temperature but should be placed in freezer upon arrival.
Shelf life	Stable at least 8 weeks from package date in unopened package, see expiry date on package.

Specifications may be subject to change without notice.

1 - JH Na et al. Development of a Single Chain Antibody Using a Phage Display Cloning Method. Bull. Korean Chem. Soc. 2013, Vol. 34, No. 2.

2 - Eisele NB, Andersson FI, Frey S, Richter RP. Viscoelasticity of thin biomolecular films: a case study on nucleoporin phenylalanine-glycine repeats grafted to a histidine-tag capturing QCM-D sensor. Biomacromolecules, 2012 Aug 13;13(8):2322-32.

Product Information

QSensor His-tag Capturing sensor

Regeneration of His-tag Capturing sensor in situ

This functionalized His-tag Capturing Sensor offers a possibility to regenerate the surface for further measurements. A detailed protocol is outlined below. Regeneration was conducted at 25 °C.

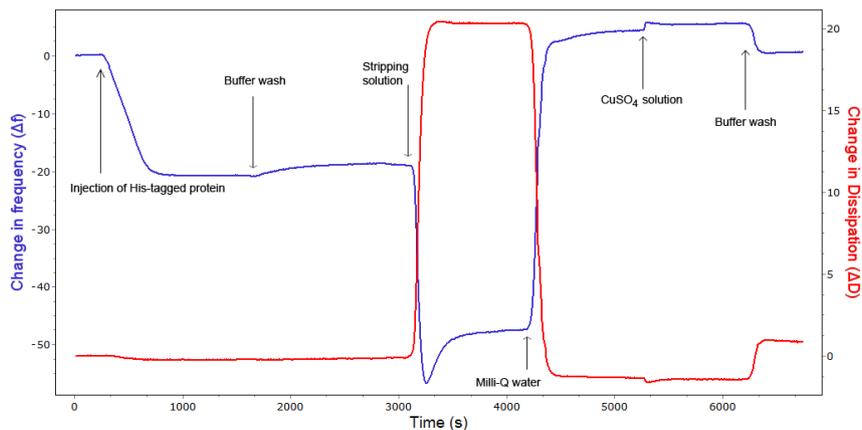


Figure 3. Regeneration of QSense His-tag Capturing Sensor surface using EDTA and CuSO₄.

Protocol steps

1. Inject the stripping buffer (200 mM EDTA, 80 mM NaCl, 0.02% Tween 20, pH 8) at 50 µl/min for 10 minutes
2. Rinse with Milli-Q water at 50 µl/min for 5 minutes
3. Inject 5 mM CuSO₄ solution (dissolved in Milli-Q water) at 50 µl/min for 10 minutes
4. Rinse with buffer specific for your assay
5. Inject His-tagged protein of interest for re-immobilization

* Reducing agent compatibility: QSX 340 is not compatible with DTT (Dithiothreitol). Compatible with TCEP (tris(2-carboxyethyl)phosphine) up to 1 mM.

** For improved surface regeneration add an injection step of 500 mM Imidazole, pH 7.4, in between step 2 and 3.

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