Carboxylic acid-SAM Formation Reagent

Cat.No: DNG-SAM03

DESCRIPTION

Description

Carboxylic acid-SAM Formation Reagent is applied for the preparation of carboxylic acid terminated self-assembled monolayers (SAMs) on a gold surface of biosensors such as for QCM (Quartz Crystal Microbalance), SPR (Surface Plasmon Resonance) or electrical analysis. Carboxylic acid-SAM can be used as an interface to immobilize a protein or a peptide on a gold surface coupled with carboxyl group activation method using NHS/WSC. Amine Coupling Kit (Cat# DNG-SAM01) is available for protein immobilization on the gold surface coated with a carboxylic acid-SAM. Carboxylic acid-SAM Formation Reagent is especially designed to minimize a non-specific protein adsorption on the surface.

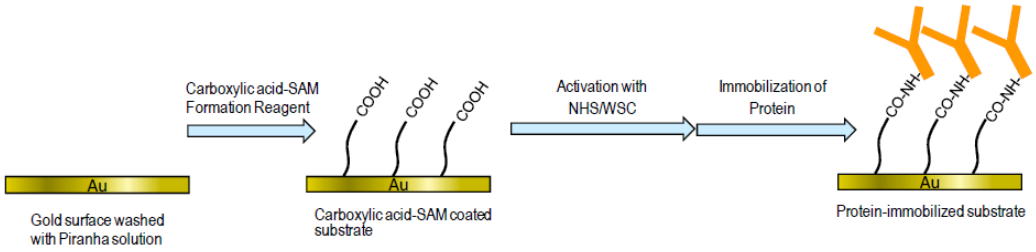

Fig1. Illustration of Carboxylic acid-SAM Formation Reagent

GENERAL PROTOCOL

General Protocol

Preparation of a Carboxylic acid-SAM surface on a gold substrate

1) Add 1 ml ethanol to a tube, and pipette to prepare 1 mmol/l Carboxylic acid-SAM solution [a)]. Then, dilute the solution 10 fold with ethanol for Step 2).
2) Immerse a gold substrate [b)] in the reagent solution prepared at Step 1) at room temperature and leave it overnight.
3) Wash the substrate several times with ethanol and purified water sequentially [c)].

a) If the reagent hardly dissolve by pipetting, use an ultrasonic bath. Use freshly prepared reagent solution at Step 2).

b) Clean the gold substrate with Piranha solution, if necessary. Mix 3 volumes of sulfuric acid and one volume of hydrogen peroxide solution to prepare Piranha solution. Since the solution is severely caustic, handle with great care.

c) Store the SAM-coated substrate under nitrogen gas in a tightly sealable glass container at 0-5ºC..

Protein Immobilization

This product does not include necessary reagents and solutions for a protein immobilization. Amine Coupling Kit (Cat# DNG-SAM01) is available for the protein immobilization on the carboxylic acid-SAM surface. If not use the kit, follow this general protocol.

Required reagents and buffers

- N-Hydroxysuccinimide (NHS)
- 1-Ethyl-3-(3-dimethylaminopropyl)carbodiimide (WSC)
- pH4-6 buffer solution
  *MES buffer is generally used.
- pH8-9 buffer solution
  *Carbonate buffers, phosphate buffers or good's buffers are generally used.

1) Prepare 100 mmol/l NHS and 100 mmol/l WSC solutions using pH4-6 buffer solution.
2) Mix equal volume of NHS and WSC solutions immediately, and add to the carboxylic acid-SAM coated gold substrate.
3) Leave it at room temperature for 1 hr, and wash several times with pH4-6 buffer solution.
4) Add a protein solution a) to the substrate, and leave it at room temperature for 1 hr.
5) Wash with PBS, and go to blocking process with a blocking solution b) if necessary.

a) The solution should be prepared with a buffer solution (pH8-9). Use 10-1,000 μg/ml of protein solution for immobilization.

b) One mol/l ethanolamine solution (pH8.5) is commonly used for blocking.

STORAGE AND SHIPPING

Storage	Store at 0-5ºC.

Note

Note	Since a trace amount of colorless or slightly yellowish liquid is in the tube, please centrifuge prior to use.