

Apr 15, 2019

AFM tip functionalization with glutaraldehyde

DOI

<https://dx.doi.org/10.17504/protocols.io.zzuf76w>

George Lykotrafitis¹

¹University of Connecticut

Chemistry Method Devel...



George Lykotrafitis

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.zzuf76w>

Protocol Citation: George Lykotrafitis 2019. AFM tip functionalization with glutaraldehyde. **protocols.io**
<https://dx.doi.org/10.17504/protocols.io.zzuf76w>

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol in our group and it is working.



Created: April 11, 2019

Last Modified: April 15, 2019

Protocol Integer ID: 22292

Keywords: afm tip functionalization with glutaraldehyde attach ligand protein, afm tip functionalization, afm cantilever tip through functionalization, afm cantilever tip, glutaraldehyde attach ligand protein, corresponding receptors on the sample surface, afm, corresponding receptor, single molecule force, such as the red blood cell membrane, red blood cell membrane

Abstract

Attach ligand protein to the AFM cantilever tip through functionalization. Further use it in the single molecule force spectroscopy to detect corresponding receptors on the sample surface (such as the red blood cell membrane).

Materials

Silicon nitride AFM probe: MLCT from Bruker Nano Inc., Camarillo, CA.



- 1 Silanize the tip with 2% v/v 3-aminopropyltriethoxysilane (APTES) in acetone for 10 min at 25°C.
- 2 Rinse the tip with deionized (DI) water.
- 3 Immerse the tip in 0.5% v/v glutaraldehyde in DI water for 30 min at 25°C.
- 4 Rinse the tip with DI water.
- 5 Incubate the tip in protein solution (100–300 µg/mL, eg. 100µg/mL αvβ3 protein) for 30 min at 25°C.
- 6 Rinse the tip with DI water.
- 7 To block remaining aldehyde groups on the probe surface, treat the probe with 100 µg/mL bovine serum albumin (BSA) in tris buffered saline (TBS) for 1 min at 25°C.
- 8 Functionalized tips can be stored at 4°C in phosphate buffered saline (PBS) for 3 days.