**BIOELECTROCHEMICAL MEASUREMENT SYSTEM OF A BIOMICROSYSTEM BASED ON ANTIBODIES**

***Version 0.1***

# OBJECTIVE

To show the procedure to follow for the preparation, immobilization of reagents, and proof of concept using different substances, which are located in the clean room laboratory of the Department of Electrical and Electronic Engineering.

# SCOPE

To provide a protocol for the Uniandes community in order to carry out the preparation of different substances that will be used in the biomicrosystem.

# PREPARATION OF SUBSTANCES

## PREPARATION OF THIOL SOLUTION

1. Weigh 0.0245 g of 4-aminothiophenol.
2. Dissolve 0.0245 g of 4-aminothiophenol in 9.8 mL of ethanol to obtain a concentration of 4-aminothiophenol 20 Mm.

# IMMUNOASSAY DEVELOPMENT

1. Place 10 μl of the thiol solution in the holes of the static fluidic microsystem.
2. Wait for 4 hours to allow the thiol to react with the gold at room temperature while the self-assembled layer is formed.
3. Remove the thiol solution from the holes of the microsystem using a micropipette suction.
4. Wash the substrate with ethanol to remove thiols that did not adhere to the gold.
5. Wash the substrate with water so as not to denature the antibody proteins during their immobilization.
6. Allow the samples to dry.
7. Pour the antibody concentration onto the electrode previously modified with thiols.
8. Pour the solution with a concentration of 100 μg/mL of antibodies into the holes of the static fluidic microsystem.
9. Incubate the samples ON at 4°C.
10. Remove the antibody solution from the holes of the microsystem by suction with a micropipette.
11. Eliminate the excess antibodies that did not react with the thiols by washing with PBS (pH 7.2) and water.
12. Store the samples at 4°C.

# PROOF OF CONCEPT WITH PROTEINS

1. Place the solution with a concentration of 5 ng/mL of protein in the holes of the static fluidic microsystem.
2. Wait for one hour for the protein to react with the antibody at room temperature while the antigen-antibody complex is formed.
3. Wash the substrate with PBS to remove the proteins that were not recognized by the antibodies.

# CHANGE CONTROL

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| **CHANGE DESCRIPTION** | **DATE** | **VERSION** | **APPROVED BY** |
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