4B-10

Novel Insulator Layer Manufacture Method for Graphene Biosensor

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Research Target

- For our graphene biosensor, electrode part has to contact with bio-liquid.

Without protection of insulation layer, it is easy to generate leakage current.

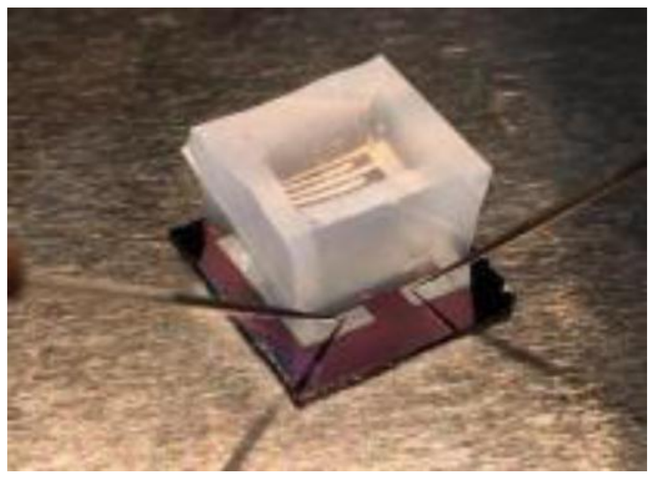
Then suitable anode materials and insulating layers are necessary

for graphene biosensors.

- Made insulating layer on surface of electrode by sputter deposition

using SiO2 or Al2O3

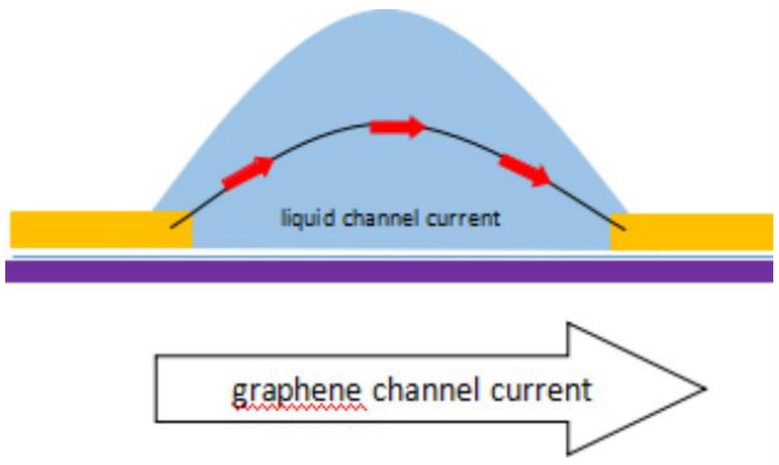
to prevent electrode from coming into direct contact with biological solution.



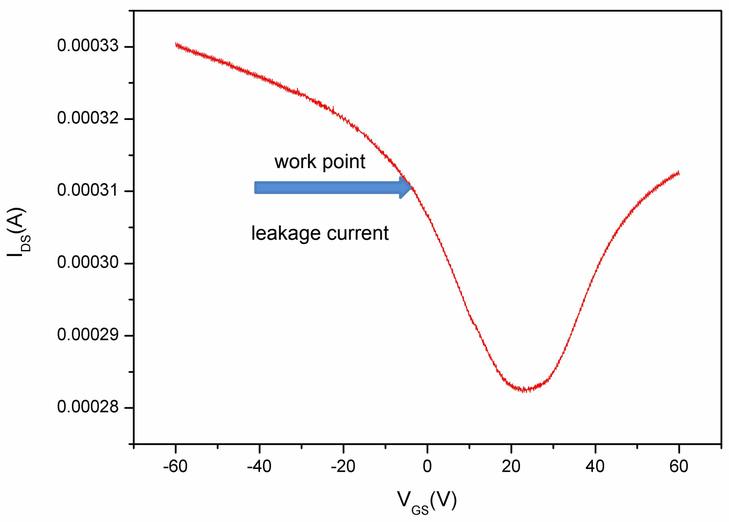
Biosensor

Development of Manufacturing Process

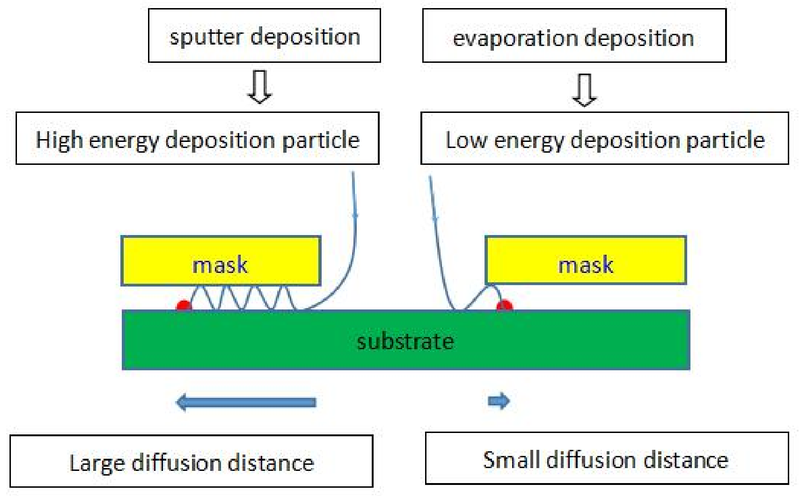
1. Leakage current



2.Noise interference

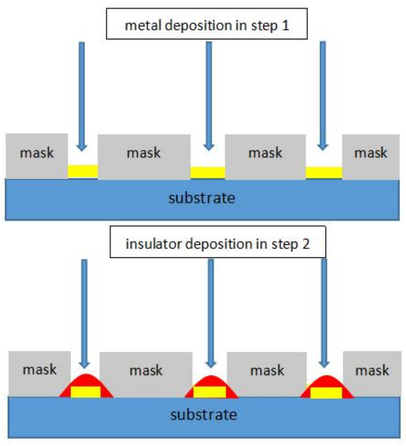


3.Sputter deposition and evaporation deposition

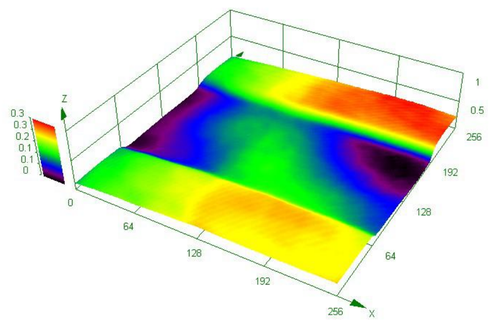


Experimental Methods

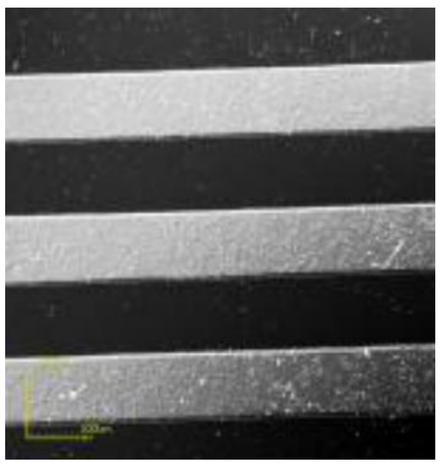
1. SiC Graphene STM



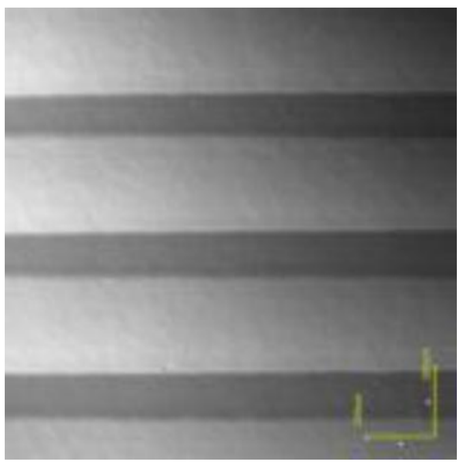
2. Electrode image



3. Electrode layer



4. Insulator layer



Conclusion

- We have developed a novel method to insulate the electrode.

Mask and substrate are tightly fixed into combination.

Using evaporation deposition to manufacture electrode through shadow mask.

After evaporation deposition, do not move shadow mask and substrate,

directly use sputter deposition method to deposit insulator layer onto this combination.

- This method can solve insulation problem of graphene biosensors

at ultra-micro detection situation that leakage current cannot be ignored.