

2D materials integration in photoelectric devices

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Graphene and MoS₂ are respectively classified as semi-metal and semi-conductor [1,2]. These properties as well as their configuration (2D materials) make them interesting candidates for microelectronic applications. However, to integrate them in devices currently involves some constraints. In fact, to obtain usable devices, 2D materials have to be transferred from their growth substrate and patterned without inducing chemical contamination and physical defects. Finally, good electrical contacts have to be obtained to guarantee charges injection. Here the focus is on MoS₂/metal/graphene stack realized for photodetection applications. The way to transfer MoS₂ and patterned it avoiding contamination will be detailed.

References

- [1] Novoselov K. S., Mishehenko A., Carvalho A and Castro Neto A. H., Science, Vol 353, Issue 6298 (2016)
- [2] Schwierz F., Pezoldt J. and Granzner R, Nanoscale, 7, (2015), pp. 8261-8283.

Figures

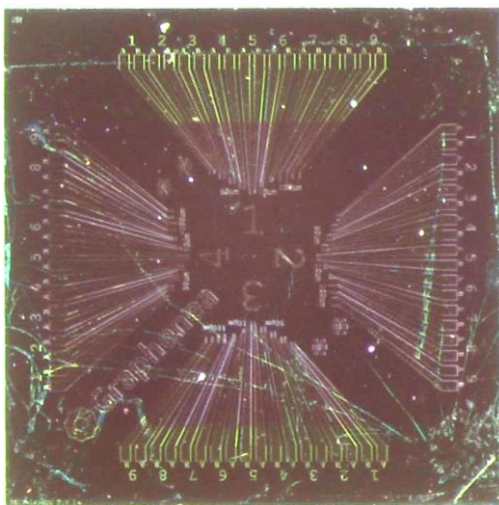


Figure 2: Optic image of six monolayers MoS₂ film transferred on devices (real size of the sample: 1cm.1cm)

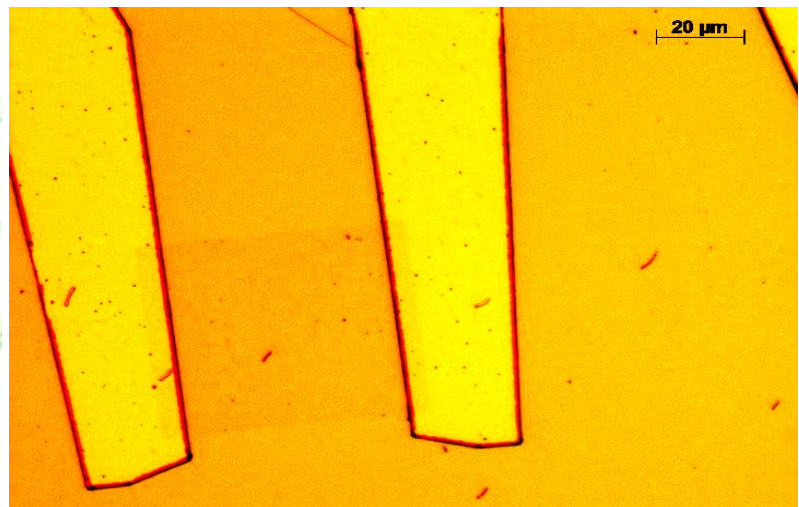


Figure 1: Optic image of graphene monolayer film under metallic electrodes covered by 6 monolayers of MoS₂