Towards CVD Graphene Industry Integration

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In the last years systematic miniaturization of devices for the emerging technologies and the extraordinary electronic properties of CVD graphene have been the main driving force for promoting its application in biosensing or photodetectors among others [1,2]. Excellent results have been achieved at laboratory scale but now it is time to move to Industry.

Large scale integration of graphene is limited by the high CVD synthesis temperature (around 1000^0C) when using a metal catalyst. Therefore, the current processing requires a transfer process of the graphene grown on the catalyst (Cu, sapphire..) to the desired substrate that can be a bare wafer, with the following device processing, or containing already some structures. The transfer process is a key step for preserving graphene properties after growth.

In this talk, we will give a brief overview of the integration challenges that we are facing nowadays as graphene producers in order to fulfil Industry requirements. Industry demands faster production processing with good reproducibility, quality and rigorous quality control of the wafers. Furthermore, the implementation of graphene in the front-end-of-line (FEOL) in semiconductor industry demands severe metal contamination control. We will show the possible solutions that we are being explored. It is important to notice that the knowledge in graphene processing and device fabrication are essential for those that are not familiar with this 2D material. We will also present Graphene Foundry Services on custom wafers up to 150mm with customized design. This service enables fast device prototyping and accelerates the development towards the final application.

References

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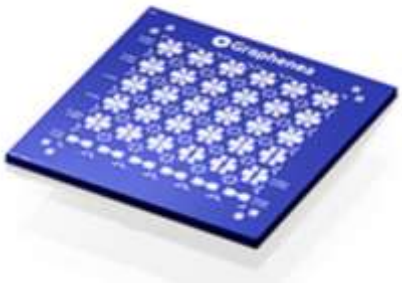
Figures



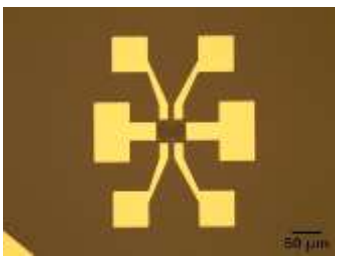


Figure 1: Example GFET-Hall Bar Sensors