Industrial applications of Monolayer Graphene on polymer

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After a more than a decade and tens of thousands of publications, graphene produced by chemical vapour deposition on copper foils still remain at the sweet spot regarding cost , speed and quality for large scale production of monolayers on insulators. I will briefly recall the principle of these techniques and then present the use of this process for the industrial production of medical-grade films . In particular I will be insisting on the possibility to combine therapeutics (biostimulation, healing) and diagnostics (biosensing) features in the same device.

I will also present more recent works on the realization of in vitro diagnostics based on the same material. we are developing a concept of an electronic strip based on a new material for medicine, graphene, whose maturity finally allows its introduction at the industrial scale. The implementation of synthesis techniques of this material from microelectronics allows to produce it in mass at low cost using clean-room free processes based on printed electronics. These sensors are connected and powered by a simple smartphone link. They can be easily coupled with a digital monitoring solution via the smartphone that will improve the diagnosis in the field and the monitoring of chronic diseases. I will detail the functioning of the testNpass™, for the detection of the SARS-CoV-2 virus, in particular the process of conversion of the biochemical signal into an electrical signal. Finally, I will show that a myriad of other use cases of this technology exists beyond the Covid crisis.

References

[1]   https://www.grapheal.com
[2]   Flyer available at https://tinyurl.com/2s46bd6w
[3]   Flyer available at https://tinyurl.com/4fm4ck39

Figures

Figure 1: WoundLAB™ , a platform for wound management and healing monitoring

Figure 2: TestNpass™, a secure & biometric antigen biosensor generating a tamperproof digital sanitary certificate.