

# Graphene biosensors for embedded field diagnostics.

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Graphene is converting into a very promising material in bioelectronics for in vitro (1-4) as well as in vivo (5) research. It combines optical transparency, electrical conductivity with biocompatibility. We have explored the use of graphene-on-polymer for enabling biosensing and tissue engineering simultaneously.

The first-generation of our system is a very thin and transparent graphene on polymer scaffold. We are developing an innovative bandage technology platform based on that material, becoming an insulator film in order to better support chronic wounds. We research the possibility to combine therapeutics (such as wound healing acceleration) with diagnostics features (such as infection detection) in the same device. The sensor is integrated into a commercial bandage that is applied in direct contact with an open wound. Aimed at the diagnostics and treatment of chronic wounds that affect the diabetics and elderly.

A second application of our graphene-based device is meant for the diagnostics of SARS Covid-19. The device was modified into a Covid-19 G-FET biosensor (6), allowing for the detection of the virus. Early tests have been made for the detection of the Spike S protein in buffer and neutralized SARS Covid-19 virus in universal transport medium (recovered from hospitalized infected patients).

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## References

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