

ZEN Graphene Solutions Response to COVID-19 Antiviral Coatings and Viral Detection

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Summary

ZEN Graphene Solutions is a Canadian company with a mission to produce consistent, high-quality graphene products at industrial scale and make graphene easy to use in industrial processes and technology through a variety of solutions (masterbatch, master alloys, inks, and dispersions) produced economically with environmentally and socially responsible principles.

In April, the response to COVID-19 closed the research facilities of ZEN's collaborators including universities and industrial partners. ZEN refocused their resources to pursue possible graphene solutions that could contribute towards the fight against COVID-19. Three potential areas have shown promise and results will be featured in the presentations.

1. ZEN Graphene Solutions developed an antiviral coating that has been proven to be over 99% effective to inactivate the SARS-CoV-2 virus and is suitable to be incorporated into masks and filter technology. The coating features the symbiotic activity of graphene oxide and metallic nanoparticles (see Fig. 1).
2. ZEN Graphene is supporting Dr. Ménard from the University of Ottawa to develop a coating with an anti-pathogen mechanism of graphene based on the atomic-scale edges of graphene that effectively act as nano-scissors piercing the cellular membrane and, hence inactivating viruses as well as other types of pathogens such as bacteria and fungi (see Fig.2).
3. ZEN Graphene is in collaboration with researchers at the University of Ottawa and McMaster University to develop a graphene-based rapid COVID-19 paper sensor that utilizes aptamer technology which is a synthetic single-stranded DNA. Each aptamer has a unique shape that has a specific molecular recognition (bonding).

FIGURES

Figure 1: ECS imagery of coated mask material showing carbon and oxygen content of Graphene Oxide on mask

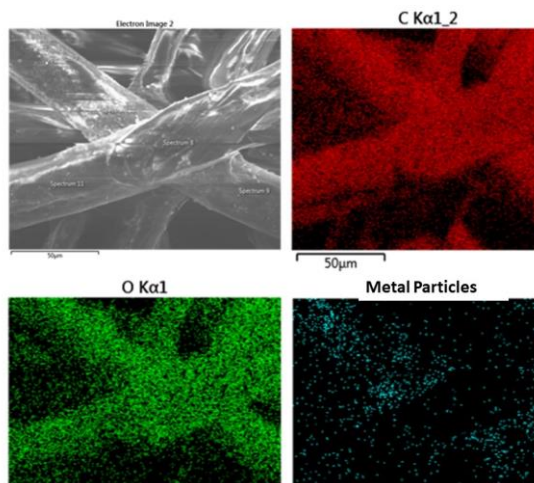


Figure 2: Graphene acting as nano-scissors

