

The Role of Smart Textiles To Face the Coronavirus: Prospects and Opportunities

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Abstract

It is impossible for human life to meet the king naked in “The King’s New Clothes”. The pursuit of the sustainability of the textile industry is inevitable. How to contribute to the sustainability and environmental protection of the earth in the field of textile industry is exactly. Here the key focus that supercritical fluid dyeing technology mainly uses carbon dioxide instead of water. Both of polylactic acid fiber (PLA) and polypropylene fiber (PP) are fiber materials on environmental protection in the text. Finally, the concept of using a single material on environmentally friendly textiles with innovative designs is also worth promoting way. In the near future, the development of textile technology can continue to break through, creating a way for people and the environment to live together in the world.

Opinion

A novel coronavirus SARS-CoV-2 is responsible for generating an infectious respiratory disease called COVID-19, which has quickly evolved into a global pandemic in just over two months [1]. In record time, the scientific world has achieved remarkable progress has been made in biological and medical research, including identifying the virus, sequencing its genes, and resolving cogent protein structures. As well as, the manufacture of testing and diagnosis kits, development of vaccines trials, and antiviral drugs are also being accelerated [2,3].

The WHO Director-General commented within his opening remarks at the media briefing on COVID-19 - 29 June 2020, about the importance to accelerate research about the tools we need [4]. In this context, considering that the healthcare professionals are at the frontline, working to contain and to mitigate the spread of this disease, and therefore, they are exposed to the Sar-Cov-2 virus for long hours and under high viral loads.

The Personal Protection Equipment (EPP) used by healthcare professionals tending COVID-19 patients includes facial masks or respirators, protective suits, spill gowns, gloves, boot covers, and goggles or face shields, and as mentioned by Kang et.al. they need to wear it continuously for extended hours [5]. Additionally, in recent years there has been a need to improve both the materials and the design of the EPP, e.g, more than five years ago Locatelli et.al pointed out the need to improve the functionality, comfort and performance of the facial masks such as N95 aspirators [6].

Therefore, it is of the utmost importance to develop alternatives to safeguard the health of health professionals while ensuring their comfort and convenience. The smart textiles materials can help develop more adaptive, skin-friendly materials and plus an interface design to ensure good seal over extended periods of time and changing skin conditions due to perspiration. E.g, Kunitoshi et al. [7] reported the effect of cotton textiles containing Cu²⁺ held by zeolites (CuZeo-textile) on the inactivation of H5 subtype viruses. They found evidence that revealed the rapid destruction of virions of H5 viruses by the Cu²⁺ in the CuZeo-textile [7]. At that time, smart textile materials and nanotechnology can represent an alternative to reduce the COVID-19 spread, particularly in critical areas, such as healthcare facilities and public places.

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