TBIS

Topic of the Speech:
Application of Porous Activated Carbon Structures for Deactivation of SARS-Cov-2

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Dr. Mohanapriya Venkataraman is a passionate textile material scientist, working as an Assistant Professor at the Department of Material Engineering, Faculty of Textile Engineering, Technical University of Liberec, Czech Republic. Hailing from Chennai, India, she is a holder of a Ph.D. and multiple Post-graduations in Textile Material Engineering, Fashion Technology, and Garment Manufacturing Technology.

Her teaching and research areas include Textile Materials, Thermodynamic Analysis, Micro and Nanoporous Materials, Heat Transfer, Polymers, and Composites. She is a leader and team member of multiple international research projects funded by the EU, the Technology Agency of the Czech Republic (TA ČR), and the Czech Science Foundation (GA ČR).

She has authored and co-authored over more than 75 scientific papers in peer-reviewed journals; more than 90 conference publications; more than 15 keynote speeches; and more than 35 book chapters. She has won international recognition as “Outstanding Researcher” in multiple forums like SGS, TBIS, etc., Prior to endeavoring into academics and research, she worked as an executive in Material Quality Assurance in an International Textile behemoth. She is certified in ISO, Lean Six Sigma, 5S, Kaizen, and Silverplus Limited brands testing. She was recently profiled in TA.DI magazine of Technology Agency of the Czech Republic (TA ČR) as 1 of 3 female researchers as an example breaking the stereotype of a traditional scientist. She is an ambassador for INOMICS and “Study in the Czech Republic” initiatives. She is very passionate about woman empowerment and sustainability. She lives in Prague with her technocrat husband and two boys, Shashwath and Kirandeep.

ABSTRACT SUBMISSION
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Application of Porous Activated Carbon Structures for Deactivation of SARS-Cov-2

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ABSTRACT:

Coronavirus has produced one of the most difficult global epidemics in recent history, resulting in millions of unfortunate deaths and economic hardships. One of the most effective ways to fight against COVID-19 is to use a face mask. The mask combined with activated carbon can be beneficial for adsorbing and disinfecting the virus as it is the versatile adsorbent for the elimination of organic, inorganic, and pathogenic contaminants. The potential interactions of coronaviruses with the surfaces of such nanostructured materials will be addressed. It will give an overview of antiviral nanomaterials, with a focus on expanded graphite, graphene, and its derivatives. Activated carbon (AC) is a porous carbonaceous adsorptive material having a stiff carbon matrix, a large surface area, and a wide range of functional groups. Chemical bonds connect the carbon layers and are placed unevenly, resulting in a highly porous arrangement. Activated carbons are made from waste biomass that has been heated and chemically activated. Adsorption of pollutants from gaseous and liquid media is possible thanks to the pores in the lattice network of activated carbon. Activated carbon materials' antiviral mechanisms can be linked to specific occurrences. Adsorption of pollutants from gaseous and liquid media is possible due to the pores in the lattice network of activated carbon. Graphene materials' antiviral processes can be linked to events like virus inactivation and host cell receptor deactivation, electrostatic entrapment, and Physico-chemical destruction of viral species. Functionalization and decorating of carbons with species that improve graphene-virus interactions can augment these results. The development of low-cost, large-scale porous activated carbon materials with improved antiviral properties is intriguing research to be explored. The adjustment of electrical conductivity of activated carbon by conductive fillers and thermal treatment is required for all kinds of microbes and viruses removal by Joule heating mechanism.