

47-2020-10885 | Applying Organically Doped Copper to Filters and Surfaces to Act as Antiviral Agents  
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Recently published research studied the aerosol and surface stability of HCoV-19, the novel human coronavirus that emerged in China in late 2019 and triggered the current pandemic. According to the study's findings, HCoV-19 remained most stable on plastic and stainless steel, with the viable virus still detectable up to 72 hours after application. Interestingly, no viable virus could be measured after just four hours on a copper surface. Since contaminated surfaces may cause severe infection, these findings are highly significant for the battle against HCoV-19.

The Avnir and Hayouka labs have been working together over the past few years, with the aim of developing novel copper composites that are resistant to pathogenic bacteria and are based on a new family of materials that Avnir has termed "organically doped metals" (organics@metal). These hybrid materials combine two very different chemical families —metals and any organic molecules — which have a synergetic effect in various applications, including biological and medical ones. The general approach for the preparation of the metallic composites involves a room-temperature, one-pot, reduction of the metal cation (its positively charged ions) in the presence of the desired organic molecule while using carefully selected reducing agents. Using this approach, the team has developed novel antimicrobial-doped copper in which antimicrobial peptides or small antibacterial molecules are entrapped. It has demonstrated the new materials' high efficacy both in vitro and as a novel crop protection agent in plants.

Prof. Avnir and Dr. Hayouka will expand their current study to develop efficient copper-based antiviral agents. They will explore the entrapment of various active agents, which have been suggested as capable of tackling HCoV-19. The designed compounds will be tested on HCoV-19. The researchers are negotiating to conduct the tests in China. They are also exploring the potential of converting the compounds into a product with an Israeli start-up specializing in nanometric copper

#### Patent Status

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