Supplementary Materials for Application of Copper Iodide Nanoparticle-doped Film and Fabric to Inactivate SARS-CoV-2 via the Virucidal Activity of Cuprous Ion (Cu⁺)

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**Supplementary Materials and Methods**

**Detection of hydroxyl radical with electron spin resonance (ESR) spectroscopy**

The copper iodide (CuI) nanoparticle dispersion was mixed with bovine serum albumin (BSA; Thermo Fisher Scientific Inc., Waltham, MA, USA) in the presence of 10 mM ethylenediamine-N,N,N',N'-tetraacetic acid disodium salt dehydrate (DOJINDO Molecular Technologies Inc., Mashiki, Japan) and 0.22 M 5,5-dimethyl-1-pyrroline-N-oxide (DMPO; Enzo Biochem Inc., New York, NY, USA). The CuI or BSA concentration in the mixture was 0.38 mg/mL or 20 µg/mL, respectively. As a control, ultra-pure water (UPW) was mixed with BSA. At that time, 1.2 mg/mL N-acetyl-L-cysteine (NAC) was added to some mixtures for the scavenging of reactive oxygen species. These mixtures were agitated using a rotator for 6 h at ~25°C and ~50% relative humidity prior to the removal of CuI nanoparticles by centrifugation at 13000 ×g for 5 min. The supernatants were subjected to the measurement of DMPO-OH spin adducts using JES-FA100 ESR spectrometer (JEOL Lyd., Tokyo, Japan). The measurement conditions for ESR were as following: frequency, 9.42 GHz; microwave power, 1 mW; center field, 335.7 millitesla (mT); sweep width, 5 mT; sweep time, 2 min; modulation width, 0.07 mT; amplitude, 200.
Fig. S1. The ESR spectra of DMPO-OH spin adducts. The mixtures containing UPW and BSA without NAC (blue line), CuI and BSA without NAC (orange color), or CuI and BSA with NAC (yellow color) were agitated for 6 h, and then DMPO-OH spin adducts were measured. The gray line shows the difference between the spectra of blue line and orange line.