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Pathogenic microbial aerosol(PMA) is an important way to spread respiratory infectious diseases. Low temperature plasma (LTP) contains high-density charged particles, a variety of highly active components, and a strong electric field, which can effectively inactivate PMA.

In order to develop the LTP air filtration system which can effectively inactivate PMA, we studied the biochemical mechanism of inactivating pathogenic microorganisms by LTP, and the physical process of charging and adsorption of PMA by LTP, and on this basis, we developed a plasma air purifier (Figure 1) for effective inactivation of PMAs through an artificial neural network and

genetic algorithm-based approach. This LTP source removed $99.32 \pm 0.15\%$ of the H1N1 virus in the air in a closed environment of 20 m^3 in a P3 lab[1,2].

References:

1. H. Gao et al., "Atmospheric-pressure non-equilibrium plasmas for effective abatement of pathogenic biological aerosols," *Plasma Sources Sci. Technol.* 30, 053001, 2021.
2. Y. Zhang et al. "On the charged aerosols generated by atmospheric pressure non-equilibrium plasma," *High Voltage*, 6, 408, 2021.

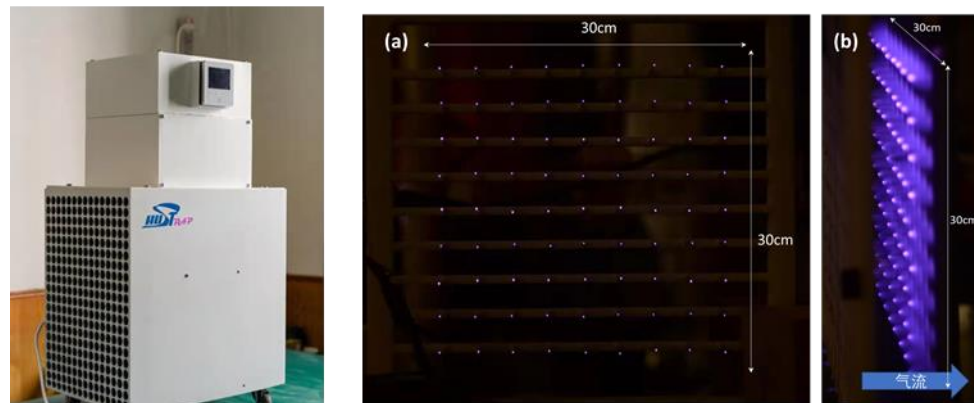


Figure 1. The plasma air purifier with a large area plasma array