

# ADVANCED FUNCTIONAL MATERIALS

## Supporting Information

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Sec-Eliminating the SARS-CoV-2 by AlGaN Based High Power Deep Ultraviolet Light Source

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## Supporting Information

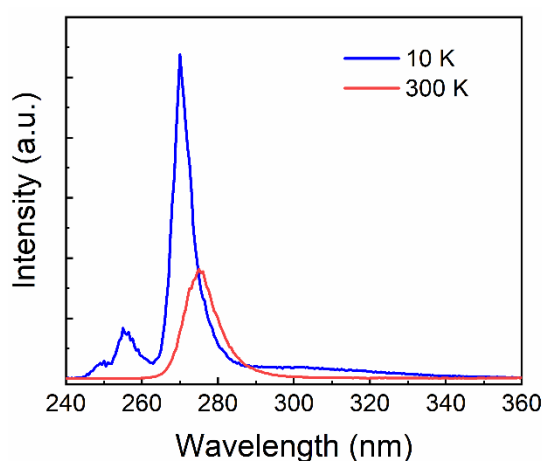
**Sec-eliminating the SARS-CoV-2 by AlGaN based high power deep ultraviolet light source**

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**S1. Internal quantum efficiency (IQE) calculation by PL measurement**

The IQE of the UVC LED wafer is calculated from the PL spectra measured at 10 K and 300 K, as shown in **Figure S1**. The emission wavelength was observed at 275 nm at room temperature (300 K) and 270 nm at low temperature (10 K). The red-shift of the emission peak was also observed in previous studies.<sup>[1-3]</sup> The relative weak emission peak at 255 nm observed at 10 K originates from the p-Al<sub>0.58</sub>Ga<sub>0.42</sub>N layer and it decays to be invisible at 300 K. Nonradiative recombination is supposed to have negligible influence on the efficient emission observed at 10 K. Thus the IQE value at 300 K is evaluated as ~60% which is the ratio between the integrated intensity of the emission peak (275 nm) at 300 K and 10 K.



**Figure S1** PL spectra measured at 10 K and 300 K.

**S2. EL spectrum of the bare UVC LED wafer**

Figure S2 shows the spectrum of the EL measurement of bare-wafer in **Figure 3a**. Indium was used as the contact material for both cathode and anode. The measured current was set as 40 mA. The 275 nm emission peak is observed with the FWHM of ~12 nm.

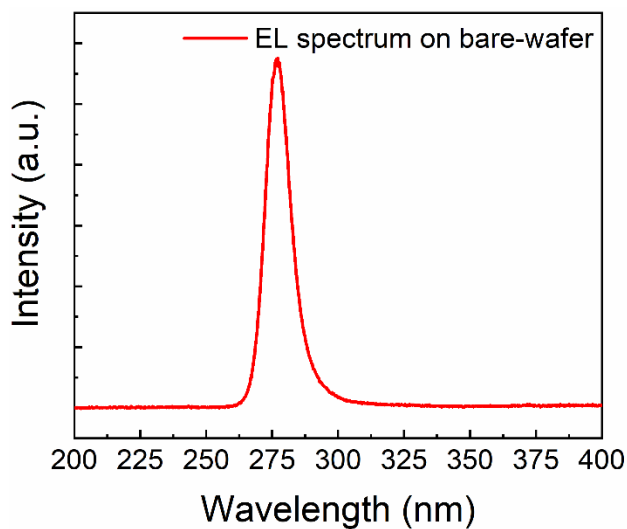


Figure S2 The EL spectrum measured on bare UVC LED wafer

## References

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