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The influence of Ne-Xe gas mixture ratio on vacuum Ultraviolet and infrared line in AC-PDP

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The improvement of luminance and luminous efficiency is the one of the most important part in AC-PDPs. To achieve high luminance and luminous efficiency, high VUV emission efficiency is needed. We measured the emission spectra of vacuum ultraviolet(VUV) and infrared(IR) rays in surface discharge AC-PDP with Ne-Xe mixture gas. The influence of Ne-Xe gas-mixture ratio on resonance state $Xe^*(3p1)$ and excited state $Xe^*(3p2)$ has been investigated. It is found that the intensity of VUV 147nm emission is proportional to that of the IR 828 nm emission, and the VUV 173nm emission is roughly proportional to that of the IR 823nm emission. The electron temperature and plasma density have been experimentally measured from the center of sustaining electrode gap by a micro Langmuir probe in AC-PDPs. The plasma density from the center of sustaining electrode gap are shown to be maximum value of $9 \times 10^{11} \text{ cm}^{-3}$, where the electron temperature is about 1.6 eV in this experiment.