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Measurement of Electron Temperature and Plasma Density in Coplanar AC Plasma Display Panels

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The electron temperature and plasma density in coplanar alternating-current plasma display panels (AC-PDPs) have been experimentally investigated by a micro Langmuir probe and the high speed discharge images in this experiment. It is noted in this experiment that the electron temperature obtained from both the micro Langmuir probe and high speed ICCD camera decreases from 2.5 eV to 1.2 eV as the filling Ne+Xe gas pressure increases from 150Torr to 350Torr. It is noted that these electron temperatures are in good agreement with each other within 5 % error limit. The plasma density at the lateral distance of $125\mu\text{m}$ away from the center of sustaining electrode gap has been found to be saturated from $0.73 \times 10^{11} \text{ cm}^{-3}$ to $7.54 \times 10^{11} \text{ cm}^{-3}$ at the Ne+Xe filling pressures ranged from 150 Torr to 350 Torr.