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Two-Dimensional Measurement of Electron Temperature and Plasma Density in coplanar AC Plasma Display Panel

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Two-dimensional electron temperature and plasma density in coplanar alternating-current plasma display panels (AC-PDP's) have been experimentally investigated by a micro-Langmuir probe in this experiment. The resolution of a step motor to move in micro-Lanmuir probe is 20 μm . The used gas in this experiment is Ne+Xe (4%) mixture gas. The electron temperature and plasma density can be obtained from current-voltage(I-V) characteristics of micro Langmuir probe, in which negative to positive bias voltage was applied to the probe. The horizontal ion density has been observed to be highest $\sim 1.29 \times 10^{12} \text{cm}^{-3}$ at both the central and edge regions of the electrode. Also it is noted that the horizontal electron temperature shows the trade-off tendency to the ion density. The temperature is the lowest $\sim 0.78 \text{ eV}$ at the central region of electrode. The vertical ion or plasma density also has been measured to be the highest $\sim 1.29 \times 10^{12} \text{cm}^{-3}$ at vertical location of 125 μm in this experiment.