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Experimental measurement of the plasma parameters in Ar/SF_6 inductively coupled plasma SEUNG-JU OH, HYO-CHANG LEE, YOUNG-KWANG LEE, JUNG-KYU LEE, CHIN-WOOK CHUNG, Hanyang University — SF6 gas or Ar/SF6 mixing gas is widely used in plasma processes. However, there are a little experimental studies with various external parameters such as gas pressures and mixing ratios. In this work, a study of the plasma parameters were done in Ar/SF_6 inductively coupled plasma (ICP) from a careful measurement of the electron energy distribution function. At a low gas pressure, as mixing ratio of SF_6 gas increased at a fixed ICP power, electron density decreased and electron temperature increased, but it was not changed largely. However, a remarkable increase in the electron temperature was observed with decrease in the electron density at higher gas pressures. The variations of electron density and temperature were more dramatic at high gas pressures. These changes in the plasma parameters could be explained by combined effect of large electron losses due to attachment and electron heating. Also, the measured plasma parameters are compared to the theoretical results with simplified global model.

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