ABSTRACT

TE 133245

The measurement of the electron temperature and the plasma density of Argon plasma which is generated from the RF inductive discharge at 13.56 MHz are described using the technique of Langmuir probe and the optical emission spectroscopy. The experimental data will be used in the process of plasma immersion ion implantation. The eletron temperature and the plasma density obtained at the gas pressure ranging between 0.5-3.0 mTorr and RF power ranging from 10 to 250 W show that the electron temperature and plasma density measured from the Langmuir probe technique is 2.8-4.0 eV and 0.1-1.3x10^{10} cm^{-3}, respectively. The electron temperature obtained from the second technique using local thermodynamic equilibrium model is about factor 0.4 compare to the first one. In addition, the electron temperature decreases with increasing gas pressure, but increases proportional to the RF power. The plasma density increases with both gas pressure and RF power.