The electron temperature measurement by using an optical emission spectroscopy in inductive Ar/O2 mixture discharge YU SIN KIM, YOUNG-KWANG LEE, CHIN-WOOK CHUNG, Hanyang University — Electron temperatures (Te) were measured by using an optical emission spectrometer (OES) method in Ar/O2 mixture inductively coupled plasma. The OES method is based on the simple collisional-radiative model with relative intensities from the light emission of the argon 4p level [1]. The OES measurements were compared with the floating harmonics method [2]. At a pure argon discharge of 5 mTorr, the measured Te from the OES method was 3.6 eV. As O2 flow rates increase, the Te increased gradually from 4.1 eV to 4.7 eV. However, the Te from the OES method was slightly higher than that of the floating harmonics method. These differences caused by changed metastable densities which can affect the light intensity ratio of the 4p lines and the error of rate coefficient(K) values. Although there are a little difference of the Te, note that trends of the measured Te with the O2 addition were good agreement with that from the floating harmonics method. These results show that our OES method is applicable to the plasma diagnostics in the mixture gas discharges such as an industrial plasma process monitoring because this noninvasive OES method does not perturb the plasmas. [1] Y.K. Lee, K.T. Hwang, M.H. Lee and C.W. Chung, J. Korean Phys. Soc. 52. 6(2008) [2] M.H. Lee, S.H Jang, and C.W. Chung, J. Appl. Phys. 101, 033305 (2007)