

Title : Effect of light-induced atomic desorption on atomic vapor pressure in a rubidium glass cell

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Abstract

In atom-based electric field measurement, an atomic vapor in a glass cell is used for detecting electric field signals. The vapor pressure of the atoms inside the cell has to be high enough so that the signal can be recovered from the noisy background. One technique used for increasing the vapor pressure in the glass cell is light-induced atomic desorption (LIAD). By emitting light with higher energy than the work function of the glass, the atoms that had been adsorbed on the glass surface would have a probability to be desorbed. This research reveals the effect of LIAD on the vapor pressure of atoms by probing the saturation spectroscopic signal of rubidium atoms in the vapor cell. We observe the increase in vapor pressure after applying LIAD, which allows us to significantly improve the spectroscopic signal strength. The result will then be exploited for further development in electric field measurement using the atomic sensor.