

The ionization of calcium atoms resonantly excited to the $4s4p\ ^3P_1$ metastable state is investigated. In particular, the influence of various experimental parameters on the total ionization yield and the rate of its growth are reported. Maximum ionization yield was obtained with the buffer gas (Ar) pressure in the range 100-650 mbar. Furthermore, the time history of depopulation of the metastable state $4s4p\ ^3P_1$ monitored in a 'pump' and 'probe' experiment using a second dye laser tuned to the $4s4p\ ^3P_1$ - $4s5s\ ^3S_1$ transition is presented. The effective lifetime of the $4s4p\ ^3P_1$ state is shortened to $31\pm 2\ \mu\text{s}$ at $850\ ^\circ\text{C}$ and 800 mbar Ar pressure from the known value of about $350\ \mu\text{s}$.