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Femtosecond Laser Ionization of Organic Amines with Very Low Ionization Potential. TOMOYUKI YATSUHASHI, TAKASHI OBAYASHI, MICHINORI TANAKA, MASANAO MURAKAMI, NOBUAKI NAKASHIMA, Graduate School of Science, Osaka City University — The interaction between high intensity femtosecond laser and molecules is one of the most attractive areas in laser chemistry and ionization is the most fundamental subject. Theoretical consideration successfully reproduced the ionization behavior of rare gases. However, the understanding of ionization mechanisms of large molecules is difficult more than those of rare gases due to their complexity. Generally speaking, molecules are harder to ionize than rare gases even if they have the same ionization potential. The suppressed ionization phenomena are one of the important features of molecular ionization. Hankin *et al.* examined 23 organic molecules with ionization potentials between 8.25 and 11.52 eV. We have examined ionization and/ or fragmentation of many organic molecules, including aromatic compounds, halogenated compounds, methane derivatives etc. at various wavelengths below 10^{16} Wcm^{-2}. In order to investigate the nature of molecular ionization, it is interesting to examine a variety of molecule in a wide range of ionization potential. In this study, we examined several organic amines because we can explore the uninvestigated ionization potential range down to 5.95 eV. In addition to the significant suppression of the ionization rates, stepwise ionization behavior, which was not observed in rare gases, was observed.

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