

Abstract Submitted
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Determination of collisional quenching rate coefficients of metastable nitrogen molecules by air pollutants SUSUMU SUZUKI, HARUO ITOH, Chiba Institute of Technology — It has already been investigated on the determination of the collisional quenching rate coefficients of the metastable nitrogen molecules $N_2(A^3\Sigma_u^+)$ by some air pollutants [1] in our laboratory. In this report, we present the result on the collisional quenching rate coefficient of $N_2(A^3\Sigma_u^+)$ by formaldehyde (CH_2O) using a theoretical procedure that takes into account the reflection of metastables at the boundary. As far as we know, this report is the first result of the collisional quenching rate coefficients of $N_2(A^3\Sigma_u^+)$ by CH_2O . Formaldehyde is a colorless gas with the foul odor, and elements of the adhesive, paints, and preservative, etc. It is widely used for construction materials such as houses, because it is low cost. It is released from paint of construction materials in air, and, in that case, it is known as one of the causative agents of so-called “Sick building syndrome” to influence the human body harmfully even if it is a low concentration. The obtained collisional quenching rate coefficient of $N_2(A^3\Sigma_u^+)$ by CH_2O is $(4.7\pm 0.4) \times 10^{-12} \text{ cm}^3/\text{s}$. Because the collisional quenching rate coefficient by CH_2O is large, it is understood that CH_2O receives energy easily from $N_2(A^3\Sigma_u^+)$. In addition, we reports on the obtained collisional quenching rate coefficient of $N_2(A^3\Sigma_u^+)$ by some air pollutants. [1] S. Suzuki, T.Suzuki and H.Itoh: Proc. of XXVIII ICPIG (Prague, Czech Republic), (2007) 1P01-40.

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