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Influence of the oxygen feed position on the compositions and isotopic contents of reaction products in N₂ glow discharge SHINSUKE MORI, MASASHI ICHIKAWA, THI ANH NGA NGUYEN, MASA AKI SUZUKI, Tokyo Institute of Technology — We have performed the nitrogen isotope separation by the plasma chemical reactions in N₂-O₂ glow discharge system and investigated the influence of the oxygen feed position on the compositions and isotopic contents of reaction products in N₂ glow discharge. This isotope separation method is due to the vibration-to-vibration energy exchange among the vibrational states of N₂ molecules. When the oxygen is fed into the N₂ glow discharge from the upstream of the discharge area, the nitrogen-15 enrichment is observed and the maximum nitrogen-15 separation factor of 1.6 is obtained in the NO_x products while the ozone is the main component in the reaction products. On the other hand, when the oxygen is fed into the N₂ glow discharge from the downstream of the discharge area, the formation of ozone is negligible and NO_x is the main component in the reaction products. However, when the oxygen is fed into the downstream of the discharge area, the nitrogen-15 isotope separation factor in NO_x products is much smaller than that for the premixing case.

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