

Abstract Submitted
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Decomposition of Volatile Organic Compounds under Low-Energy Pulsed-Electron Beam Irradiation¹ MASATO WATANABE, Tokyo Institute of Technology, ASUNA FUKAMACHI, AKITOSHI OKINO, EIKI HOTTA, KWANG-CHEOL KO, Hanyang University — Development of treatment system of gaseous pollutants including some toxic substances, such as nitrogen oxides (NO_x) and volatile organic compounds (VOCs), is one of the important technological research subjects. It is well known that the non-thermal plasma processes using electrical discharge or electron beam are effective for the environmental pollutant removal. Especially, the electron beam can efficiently remove pollutant, because a lot of radicals which are useful to remove pollutant can be easily produced by high-energy electrons. In present study, decomposition of VOCs under electron beam irradiation was experimentally investigated in order to examine the kinetics of the process and to characterize the reaction product distribution. The experiments were carried out using a compact 100 kV secondary emission electron gun (SEEG). SEEG is based on ion induced secondary emission phenomena, uses a thin tungsten wire pulsed glow discharge device as a wire ion plasma source. Benzene and toluene were selected as representative VOC compounds. The experimental results indicate better benzene and toluene removal efficiencies and the SEEG represents a promising technology for the treatment of VOCs.

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