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High efficiency for dioxin dehalogenation using an electron source with a carbon nanotube MICHITERU YAMAURA, Inst. for Laser Tech., SHIGEAKI UCHIDA, Tokyo Inst. of Tech., CHIYOE YAMANAKA, Inst. for Laser Tech. — We propose the application of an electron source with a carbon nanotube (CNT) for the dehalogenation of dioxin [1]. The dioxin consists of some amount of chlorine. As the chlorine content is increased, a highly poisonous dioxin is produced. It is clarified that a lot of electrons supply around the chlorine is treated on dioxin by dehalogenation due to the electron affinity of chlorine is very strong. Moreover, the dehalogenation treats on the dioxin without producing toxic by-products. To date, it has been confirmed that *o*-chlorophenol further the procession materials of dioxin is dehalogenated by utilizing electrons generated around a non-equilibrium plasma. However, a rate of approximately 50% is not expected to be found for the dehalogenation because the number of electrons supplied by the non-equilibrium plasma is low. It is well-known that the CNTs have a high aspect ratio, high mechanical strength, and good chemical stability. Hence, the rate of dehalogenation drastically increases due to the abundant supply of electrons when a CNT electron source is used. The dehalogenation of *o*-chlorophenol with high or low concentration using the CNT electron sources and the characterizations of the CNT will be discussed. *A part of this work is supported by a Grant-in Aid for Young Scientists (B) Research of the Ministry of Education, Science, Sport and Culture, Japan. [1] M.Yamaura, and S.Uchida Japanese patent pending to be submitted in 1 June 2006.

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