SMA MELTING OF INCINERATION ASHES

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and sludges (discharged from incineration and waste treatments of laboratory wastes) were thermally zed in a plasma melting system that was conducted at K with AC torches under a reduction environment. Flue vas cleaned up with a Venturi quench and packing Volatile mercury in the flue gas was adsorbed by active n and recycling via desorption. The flue gas (containing esis gas mainly) was introduced to the secondary ustion chamber of the incinerator as auxiliary fuels or a temperature thermal oxidizer. The TCLP concentrations gs were less than the Taiwan EPA limits.

IMPROVEMENT OF ENERGY EFFICIENCY BY DYNAMIC FLOW OF NO AND RADICALS IN AMMONIA RADICAL INJECTION USING AN INTERMITTENT DBD DENOX SYSTEM

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Nitric oxide (NO) gases have been decomposed by an ammonia radical injection system. The ammonia radicals were produced in an intermittent dielectric barrier discharge (DBD) plasma in a separated chamber, and were injected into the NO gas flow-field to reduce NO molecules. The intermittent power source with a one cycle sinusoidal power output easily control the energy consumed in the ammonia/argon plasma so as to obtain a high energy efficiency of DeNOx. As a result, the energy efficiency of approximately 250 g/kWh with assistance of the thermal heating of NO gas 1) was obtained. It was also found that the molar ratio of NO and ammonia gases strongly influenced to the DeNOx rate, and the energy efficiency as well 2). The molar ratio was defined as the number of ammonia particles divided by the number of NO particles in a unit time. The above discussion was based on the electrical characteristics to improve the energy efficiency. In the present study, we experimentally studied the dynamic flow of both gas particles based on the above results. The gas flow rate was changed to realize the gas mixing to facilitate the DeNOx process. The optimization of the gas flow was calculated by a simulation using the dynamic flow equations of both gases. It is found that the energy efficiency was improved by a factor of approximately 2 compared to the previously obtained results 1), 2). It is also pointed out from the hydrodynamic simulation that the laminated jet entrainment of ammonia radicals strongly influences the energy efficiency of the present DeNOx system.

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[2] K.Yukimura, T.Hiramatsu, H.Murakami, S.Kambara, H.Moritomi, T.Yamashita, "Molar ratio and energy efficiency of DeNOx using an intermittent DBD ammonia radical injection system", *IEEE, Trans. Plasma Sci.*, 2006 (in print).