

APPLICATION OF ARGON PLASMA TO DESTROY DIOXINS

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Introduction

Dioxins can be easily decomposed under temperature that is higher than 1,000K¹. As the fourth state of matter, plasma has the characteristic of high temperature. Here introduces a research of applying plasma to deal with toxic polynuclear compounds - dioxins.

Methods and material

Because of the terrible toxicity of dioxins, biphenyl, a nontoxic polynuclear compound which has similar molecular structure like dioxins, has been used as samples in experimental research for destroying dioxins. Biphenyl powder was put in to a plasma instrument through its hollow cathode. A argon plasma was generated to evaporated and then decomposing the biphenyl. The experimental result showed that a part of the biphenyl particles has been decomposed to amorphous-carbon.

Results and Discussion

To increase the decomposing efficiency, the temperature of the plasma was measured. It was about 10,000K or higher, according to the parameters of the plasma. According to the experimental and numerical results of the plasma, the heat transfer from the plasma to the biphenyl particles was discussed.

Acknowledgments

The authors would like to thank Dr. Ohata, Mr. Miyazaki, Mr. Kameda of CHUO University for their help during the experiment. The research reported in this paper is a part of the project "Research on Treatment of Hazardous Wastes by High Temperature Plasma" financially supported by Japanese Education Ministry and Chuo University.

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