

## THE TREATMENT OF MEDICAL WASTE BY ATMOSPHERIC MICROWAVE PLASMA

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During COVID-19 outbreak, medical waste has explosively increased and the large-scale medical waste disposal plant is difficult to land and has a long construction period. Under the circumstances, a miniaturized and distributed equipment can greatly relieve the pressure of medical waste treatment. Microwave plasma technology is a pollution-free and resource-recovery technology, which has not been applied in the field of medical waste treatment. Under atmospheric pressure, medical waste was gasified and pyrolyzed by the microwave plasma torch. In the experiment, the electric power and gas flow rate of each microwave plasma module were 1.5 kW and 10 lpm respectively. The temperature changes in the gasification reaction chamber and the recombination reaction chamber were monitored, and the changes of the gas components in the whole process were detected in real time. In addition, the main organic elements of medical waste and its residue were analysed. The results show that about 90% of medical waste can be converted into pollution-free gas, and the weight-loss rate of organic matter is closed to 95%. The maximum treatment capacity and daily treatment capacity of the system are about 50 kg / h, and the cost to treat medical waste is 1.233 RMB / kg. Therefore, the application prospect of microwave plasma technology in the field of medical waste treatment is very broad. Especially, the miniaturized and distributed equipment can not only greatly improve the flexibility of medical waste treatment, but also realize the on-site treatment of medical waste in some high-risk areas, and reduce the risk of virus or bacteria transmission.

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