

## Produced Gas Conversion of Microwave Carbon Receptor Reforming

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**Abstract :** Carbon dioxide and methane, the major components of biomass pyrolysis/gasification gas and biogas, top the list of substances that cause climate change, but they are also among the most important renewable energy sources in modern society. The purpose of this study is to convert carbon dioxide and methane into high-quality energy using char and commercial activated carbon obtained from biomass pyrolysis as a microwave receptor. The methane reforming process produces hydrogen and carbon. This carbon is deposited in the pores of the microwave receptor and lowers catalytic activity, thereby reducing the methane conversion rate. The deposited carbon was removed by carbon gasification due to the supply of carbon dioxide, which solved the problem of microwave receptor inactivity. In particular, the conversion rate remained stable at over 90% when the ratio of carbon dioxide to methane was 1:1. When the reforming results of carbon dioxide and methane were compared after fabricating nickel and iron catalysts using commercial activated carbon as a carrier, the conversion rate was higher in the iron catalyst than in the nickel catalyst and when no catalyst was used.&nbsp;

**Keywords :** microwave, gas reforming, greenhouse gas, microwave receptor, catalyst

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