

Production of syngas from catalytic steam reforming after carbon dioxide dry reforming with micro-wave plasma

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Currently, most of syngas(or hydrogen) is produced from fossil fuels in the world. The significance of syngas production is increasing because fossil fuels are being depleted. For this reason, new methods of syngas production need to be developed. CO₂ reforming(or dry reforming) of methane has been introduced as a method for syngas production. The utilization of CO₂ for the reforming of CH₄ gas attracted significant attention in recent decades due to its advantages over steam reforming of CH₄. Traditionally, CO₂ reforming of CH₄ has been achieved by catalytic means. However, the industrial application of this means is still limited. In this work, syngas(mainly, CO and H₂) production via CH₄ reforming in CO₂ microwave plasma enhanced catalyst at atmospheric pressure. The plasma reforming system is mainly composed of a 2.45 GHz microwave plasma and the CO/CH₄ ratio 1 of Ar balance is introduced into the microwave plasma stabilized by a swirl flow.