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Microwave-assisted catalytic pyrolysis of moso bamboo for high syngas production

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Abstract: Microwave-assisted pyrolysis of moso bamboo with the activated carbon-supported iron(III) ion catalyst was carried out with the aim of obtaining high quality and quantity syngas(H_2+CO). The effect of the catalyst on moso bamboo pyrolysis involving the temperature-rising characteristics, product distribution, tar conversion and gas compositions were investigated. The results indicated that the catalyst improved the microwave-absorption capability and increased the maximum reaction temperatures. The formation of gases was promoted by the catalyst mainly at the expense of the tar, indicating the catalyst had an excellent activity for the tar conversion. The catalyst had the positive influence on the formation of syngas with the maximum content reaching up to 81.14 vol% with H_2/CO being 1.04 and inhibited the production of CH_4 and CO_2 . The loading of iron(III) ion into activated carbon exerted a

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