371a Effect of Feedstock Heating Rate on Tarry Material Formation in Supercritical Water Gasfication

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To improve carbon gasification efficiengy for supercritical water gasfication process, tarry material production is to be suppressed. In this study, we focused on tarry material production in the heating section of a supercritical water gasification process. A bench scale plant was employed to run supercritical water gasification of glucose, and by adding large amount of cold water just after the heating section, and bypassing the reactor, product just after the heating section was collected and analyzed, especially for tarry material. It was found that when flow rate was low, and thus, heating rate was low, tarry material production was large. HPLC analysis indicated that polimerization reaction took place when heating rate was low. This study provided experimental proof for the advantage of rapid heat-up of feedstock for supercritical water gasification process.