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Abstract: Aqueous phase recirculation was investigated in hydrothermal carbonization of sweet potato waste at 220 ºC for 60 min. The result showed that the aqueous phase reuse significantly increased the hydrochar yield. The lower H/C and O/C ratios indicated that decarboxylation reaction was promoted. The C=C vibration of the benzene backbone became intense, suggesting the occurrence of aromatization and polymerization reactions. Thus, the carbon content and HHV were improved. After recirculation, hydrochar showed a decrease in combustion ignition temperature whereas an increase in pyrolysis initial decomposition temperature. The burnout temperatures in combustion and terminated temperature in pyrolysis both showed an increase trend. The hydrochars obtained from the recirculation step possessed lower emissions of NO_X or SO_2 than that from reference step. The pyrolysis emission result