







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Rice Husk Demineralization: Effect of Washing Solution on Its Physicochemical Structure and Thermal Degradation

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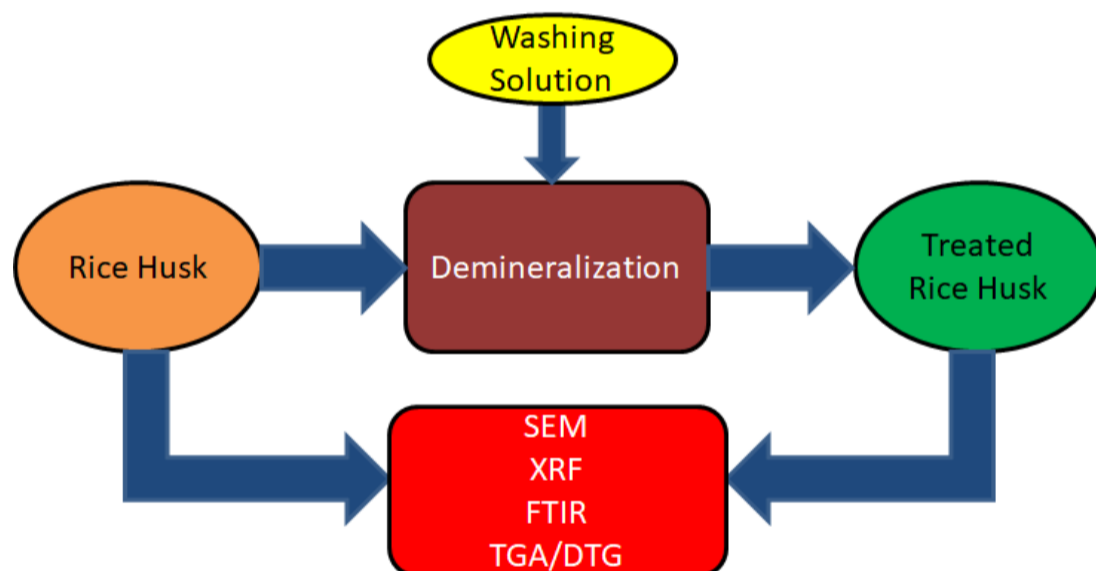
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Abstract

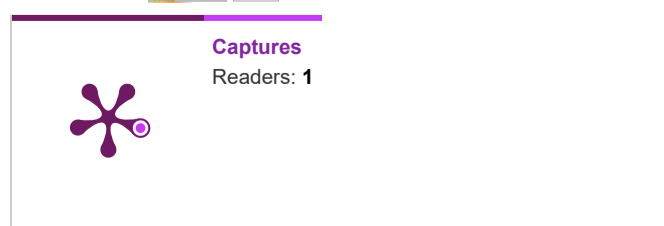
Generally, biomass consists of various amounts of minerals. These minerals influence the biomass characteristics and behavior during their use in a thermochemical process such as pyrolysis. The conversion during pyrolysis and its final product will be affected. This research was carried out to study the impact of washing treatment in water and acid solutions on the rice husk as the raw material for pyrolysis. Also, the effect of acid strength (citric acid as the weak acid while nitric acid as the strong acid) and its concentration (1, 5, and 10 wt.%) was investigated. The results confirmed from the thermogravimetry (TGA/DTG) analysis, surface analysis (SEM), and spectra (FTIR) analysis describe the treatment using water caused less change on the rice husk surface structure and its thermal degradation. However, it seems hard to reduce the minerals (proved from XRF analysis). Meanwhile, the treatment using acids solution resulted in lower mineral composition than the rice husk without treatment. This result is more visible for demineralization using a 5 wt.% nitric acid solution. However, for a higher concentration (washing treatment using 10 wt.% solutions of nitric acid), the degradation on rice husk structure was more occurred.

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Keywords: rice husk; demineralization; acid; physicochemical structure; thermal degradation

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