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An Experimental Investigation of the Effect Of A Sepiolite Catalyst On Biomass Pyrolysis

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Abstract- The fact that cannot be avoided the non-renewable energy sources (fossil and underground resources) are rapidly depleting, makes the search for new sources of energy extremely important in our country and all over the world. Besides, from past to present, due to the results of the consumption originating from human nature, it brings with it a large and unavoidable waste generation and accumulation. The disposal of these wastes by thermal methods provides an alternative to the search for energy sources as well as an important solution to the elimination of wastes, an energy source that we will never miss. In this work, due to usage of the catalysts (sepiolite), pyrolysis processes (nitrogen used as inert gas at a flow rate of 20 mL/min, 550°C temperature and atmospheric pressure) of the basic constituents of municipal solid waste (MSW) were examined. In this sense several organic specimens have been provided for use in experimental studies. These specimens were chosen of the raw materials that make up the MSW according to the data obtained from the studies made about the subject. These raw materials were mixed at certain ratios and different menus were formed. Provided that the proportions of the components in the menus were kept constant, catalysts (15% sepiolite) were added and four different menu groups were created. Various analyze (SEM imaging, EDS spectroscopy, XRF analysis, calorific value detection, and pre-treatment and post-treatment weighing) have been carried out to determine the qualities and quantities of the samples obtained at the end of the processes. According to the results, while catalyst presence reduced solid formation, pyrolysis oil and syngas formation were increased.

Keywords- Pyrolysis, energy, catalyst.

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