

Effect of NaOH on cellulose pyrolysis

Arjeta Kryeziu

University of Haute Alsace, France

The cellulose NaOH treatment causes a decrease in the organic and total oil yield but to the char yield increase. The NaOH treatment promotes the conversion of the organic fraction into char and water. Without NaOH pre-treatment is caused elimination of levoglucosan fraction and increase of aromatic fraction.

Our aim was to explore the effect of NaOH on microcrystalline cellulose (cellulose I) and cellulosic gel materials (cellulose II) during the pyrolysis.

The carbonization process was followed by TGA under inert atmosphere at different heating rates: 2,5,10 and 20 Kmin⁻¹. Thermal degradation of samples with NaOH (CMG-NaOH and MCC-NaOH) starts earlier and is less stable than Micro-Crystalline Cellulose (MCC) and cellulosic material without NaOH (CMG). TG changes are correlated with the changes in crystallinity as a function of alkalization. Where the main step of carbonization for MCC and CMG is related with one mass change, carbonization of CMG-NaOH and MCC-NaOH has complicated process of decomposition and more mass changes.

Apparent conversion degree was calculated by using Starink method.

Conclusion: Multispecialty assessment allows to be predicted the polymorph of cellulose, shape of the material, material porosity including its surface and crystallization.

Biography

Arjeta Kryeziu has finished a bachelor studies for Engineering Chemistry and obtained a master degree for Analytical Chemistry and Environment. As a very motivated student, she graduated the PhD studies at University of Haute Alsace, France on the field of Materials Chemistry and PhD at University of Ostrava, Czech Republic on the field of Analytical Chemistry. She attended several conferences such as in Brno (Czech Republic), Rome (Italy), Split (Croatia) and two other conferences on Mulhouse (France). Since PhD studies were during COVID time, the attendance on the conferences was limited.

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