carbon used in Zhu *et al.* [5]. The BET surface area of all the biochars, except the mixture is larger than the biochar used in Zhu *et al.* [5]. The pore volume is 0.01 cm^3/g smaller for lignin and α-cellulose, while the pore sizes are larger than the biochar and activated carbon form Zhu *et al.* [5]. The adsorption -desorption studies were performed using CO2, measuring the micro-pore properties of the biochar. For lignin, starch and cellulose, the BET surface area of the micro pores are already high even before the activation of such biochars, which shows promise from a catalyst support point of view. In the case of the mixture where a significant amount of protein was included, the surface area decreased significantly compare to the cellulose, starch and lignin.

IV. Conclusion

The BET, FT-IR and SEM analyses proved that biomass feedstock composition can affect the physical and chemical properties of the biochar that is produced through hydrothermal liquefaction. Biochar can be used as catalyst support and from the results it was shown that lignin and α-cellulose are definite possibilities. This is due to the relatively high surface area and high micro-porosity, that will selectively allow specific molecules to enter the pores to get in contact with active sites created by the loading of active species into the micro-pores structure of the carbon support.

. The biochar yields and SEM analysis showed that for the production of biochar that has been fully charred, the reaction temperature must be above 300˚C. The mass yield of biochar will decrease, but the biochar's properties will be enhanced.

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