

Thermal and structural characterization of hardwood lignin obtained by Kraft and Organosolv processes

Mohamed Fodil Cherif¹, Djalal Trache¹, Fouad Benaliouche¹,

¹Ecole Militaire Polytechnique, BP17 - 16046 Bordj El-Bahri, Algiers, Algeria.

fodilcherif1977@gmail.com

Abstract. Lignin is the most abundant polymer in the form of phenolic macromolecules with a complex structure. Its study continues to inspire the enthusiasm of scientific community. In this study, hardwood lignin is obtained from eucalyptus by using Organosolv and Kraft processes. The objective of this work is to investigate the features of the isolated lignins by comparing the chemical and thermal properties. The infrared spectroscopy analysis confirms the existence of different monolignols. For thermal stability, thermogravimetric technique (TG) is used from an ambient temperature to 700°C with heating rate of 10°C/min in a nitrogen environment. The obtained results showed that the decomposition of both extracted lignins is commonly governed by devolatilization and the formation of different chemicals. It was also revealed that the employed extraction methods slightly affected the chemical and thermal properties.

Keywords: Biomass, Hardwood, Organosolv lignin, Kraft lignin, characterization.