

SYNTHETIC WOOD ELABORATION FROM DEPOLYMERIZE LIGNIN BY UV IRRADIATION, EXTRACTED FROM LOW RANK COAL

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ABSTRACT

This research purpose is to determine ideal conditions for lignin depolymerization so its reactivity may be increased and later to develop a process with this lignin to get an industrial synthetic wood with good mechanical properties. Process was made in three stages. First stage consisted in lignin extraction by Sosa Method and its subsequent characterization by IR, UV, elemental analysis and solubility. Second stage consisted in lignin depolymerization by UV irradiation and later a hydroxymethylation with formaldehyde was made. Third stage was the wood product elaboration with modified lignin and melamine-formaldehyde using rice husk as natural fiber. In second stage, optimum depolymerization time by UV irradiation was found, it was 12 h. With hydroxymethylation process, in depolymerized lignin oxygen level was increased to 32.1 % so more reactive sites that became methylene bridges between lignin and resin were generated. Polymerization reaction submitted to autoclave (121°C and 15 psi) developed a synthetic wood product with better mechanical properties.

KEYWORDS: Depolymerization, Lignin, Low Rank Coal, Synthetic Wood