

# HYGROTHERMAL PERFORMANCE OF BUILDINGS AND THEIR MATERIALS

**Poznan  
Poland**

**30-31  
August  
2016**

Joint Conference:

**COST Action FP 1303**

„Performance of bio-based building materials”

**DURAWOOD Project**

„Superior bio-friendly systems for enhanced  
wood durability”



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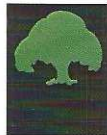


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Poznan University of Life Sciences  
Faculty of Wood Technology

Editors: Bartłomiej Mazela, Waldemar Perdoch, Magdalena Broda, Wojciech Grześkowiak and Dennis Jones

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**Title**

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<b>LIGNOCELLULOSIC MULTILAYER SELF-BONDED COMPOSITES WITH MODIFIED CELLULOSE NANOPARTICLES FOR ENHANCED WATER PERFORMANCE</b>	
Eduardo Robles, Ewelina Czubak, Grzegorz Kowaluk, Jalel Labidi	48
<b>PERFORMANCE OF WAX TREATED WOOD IN LABORATORY AND OUTDOOR CONDITIONS</b>	
Miha Humar, Boštjan Lesar, Nejc Thaler	50
<b>ENZYMATICALLY MODIFIED ALKYD FOR BIO-BASED COATING SYSTEM</b>	
Anne Christine Steenkjær Hastrup, Jonas Stenbæk, Hiep Nguyen and Anders E. Daugaard	52
<b>INFLUENCE OF REACTION CONDITIONS OF LIQUEFACTION IN THE VISCOSITY OF KRAFT LIGNIN-BASED POLYOLS</b>	
Silvia H. Fuentes da Silva, Patrícia S. Bilhalva dos Santos, Darci Alberto Gatto, Jalel Labidi	54
<b>SOLID RESIDUE CHARACTERIZATION OCCURRED FROM ORGANOSOLV BLACK LIQUOR DEPOLYMERIZATION</b>	
Patrícia Soares Bilhalva dos Santos, Silvia H. Fuentes da Silva, Darci Alberto Gatto, Jalel Labidi	56
<b>PHYSICO-CHEMICAL PROPERTIES OF RIGID FOAMS BASED ON TANNINS AND LIGNINS: PRELIMINARY RESULTS</b>	
Merle Juliette, Moïsa Feilles, Melissa Durrieu, Fatima Charrier – El Bouhtoury	58
<b>CHANGES IN THE MODULUS OF ELASTICITY OF BEESWAX IMPREGNATED WOOD DURING SOIL CONTACT</b>	
Róbert Németh, Dimitrios Tsalagkas, Miklós Bak	61
<b>CHEMICALLY MODIFIED LAMPANTE OIL AS A WOOD PRESERVATION TREATMENT</b>	
Matthew Schwarzkopf, Viacheslav Tverezovskiy, Andreas Treu, Courtney Williamson, Michael Burnard, Andreja Kutnar	63
<b>SYNTHESIS, SPECTROSCOPIC STUDIES AND ANTIFUNGAL ACTIVITY OF 1,10-DI(3-HYDROXYMETHYLPYRIDINIUM)DECANE DIBROMIDE</b>	
Anna Komasa, Piotr Barczyński, Patrycja Kwaśniewska-Sip, Grzegorz Cofta, Bartłomiej Mazela	66
<b>BIO-FRIENDLY PRESERVATIVE SYSTEMS FOR ENHANCED WOOD DURABILITY - THE DURAWOOD PROJECT</b>	
Anna Komasa, Anna Klementyna Przybył, Piotr Barczyński, Izabela Ratajczak, Kinga Szentner, Magdalena Woźniak, Paweł Kowalewski, Waldemar Perdoch, Grzegorz Cofta, Patrycja Kwaśniewska-Sip, Joanna Siuda., Wojciech Grześkowiak, Tomasz Krystofiak, Lone Ross Gobakken, Janka Dibdiakova, Magdalena Broda, Bartłomiej Mazela	68

## Solid residue characterization occurred from organosolv black liquor depolymerization

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Lignin is considered as a residue in the pulp production processes of pulp and paper industry. Therefore, it is a low value-added products, but it is a raw material with great potential which could be developed for several interesting applications. With the new concepts of biorefinery is necessary search of better utilization of industrial waste, with the development of new products. (straw, pruning waste, forestry, agricultural or industrial waste) and implementation of new green technologies are under intensive research to development processes bio-refineries. Operating under depolymerization conditions can produce lignin some phenolic components and other products (coke and residual lignin). With the depolymerization of lignin is possible to obtain phenolics compounds and the formation of other products such as coke and residual lignin also occurs (Erdocia et al. 2014). This study sought to characterize coke and residual lignin depolymerization of black liquor Organosolv of *Eucalyptus paniculata*. Which were introduced into the stainless steel reactor (Parr 4836) equipped with a heating mantle, mechanical stirrer and manometer 600 ml of liquor obtained with constant reaction conditions  $215 \pm 2$  °C  $36.5 \pm 2$  bar with stirring, with 3 times (30, 45 and 60 min). In the process of basic catalysis depolymerization (BCD) produced three distinct phases: an organic phase, an aqueous phase and a solid residue (carbon and lignin) (Erdocia et al. 2015). In that study base depolymerization catalysis (BCD) of black liquor Organosolv *Eucalyptus paniculata*, it was assessed of the total solid waste: by the total content of lignin and charcoal.

In Table 1 can be see the influence of temperature and time on the performance of the products generated from black liquor. The increase in reaction time in the batch reactor, involves an decrease in performance total solid residue, as can be seen in experiment 3 (60 min) presented the half solid waste than in experiment 1 (30 min). All experiments produced high lignin content, but no tendency was observed with reaction time, the results are in agreement with Erdocia et al. (2014). Due to its high performance, solid residue could be used for other purposes.

Table 1: The charcoal yield and residual lignin by basis catalysis depolymerization of black liquor Organosolv *Eucalyptus paniculata*.

Experiment	Solid residue [%]	Charcoal [%]	Lignin content [%]
1	50.96	11.95	39.01
2	27.96	15.76	12.20
3	23.6	3.79	19.81

### References

- Erdocia, X., Corcuera, M. A., y Labidi, J. 2015. Patent: WO2015075290 A1 - Novel method for the depolymerisation of lignin. Universidad Del Pais Vasco.
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