



# The 8<sup>th</sup> IWORS

Hotel Hutan, Ambon, October 20-21, 2008

Program of development of forest companies and strengthening the sustainable usage and management of forest lands

## Programme Book



# SCHEDULE

## The 8<sup>th</sup> International Symposium of Indonesian Wood Research Society (IWoRS)

AMBON, OCTOBER 21, 2016

Waktu	Acara	Moderator
08.00-08.30	Registration	
09.00-09.30	Opening Ceremony	
09.00-09.10	Organizing Committee Report	
09.10-09.20	Opening ceremony by Head of MAPDO	
09.20-09.30	Opening ceremony by Rector of Pattimura University	
09.30-09.40	Opening ceremony by Ambon Mayor	
09.10-10.00	Coffee Break	
10.00-11.00	Keynote Speaker I : Dr. Sang Bum Park <i>Conversion of Woody Resources into Eco-Friendly Materials by Carbonation</i>	Prof. Dr. Ir. Yusran Masjaya, M.Sc
11.00-12.00	Keynote Speaker II : Prof. Dr. Ir. Dodi Handika, MS <i>Water level management in Indonesia's wetland plantation forest to reduce submergence terrestrial infestation: case in Acacia crassicarpa plantation</i>	
12.00-13.00	Lunch	
13.00-15.00	Parallel Sessions I	
15.00-15.30	Coffee Break	
15.30-17.00	Parallel Sessions II	
17.30-18.00	The Closing of WoRS 2016	
19.00-21.00	Sangket	

		DAFTAR PESERTA PRESENTASI MAKALAH		
BIDANG ILMU RUANG		:	WOOD PHYSICS BANDA NARA 1	Techniques to Improve Wood Fiber Properties and Fiber Chemical Process Woods Physical, Mechanical and Acoustic Properties of Wood and Paper/Wood
NO	KODE ABSTRAK	WAKTU	NAMA	JUDUL
Moderator : Evalina Herawati				
1.	A2-01	13.00-13.40	Hanusa Aiso	Changes in Anatomical and Chemical Characteristics by Reaction Wood Formation in 28 Tropical Angiosperms Naturally Grown in Indonesia
2.	A2-02		Imam Wahyudi	Several Improvement Techniques for The Inferior Quality of Jabon, Sengon, and Teak Woods From Plantation Forest
3.	A2-03		Tomy Lolyanto	Heat Treatment on Colour Change and Durability of Perhutani Superior Teak ( <i>Tectona Grandis</i> L.f)
4.	A2-04		Wahyu Hidayat	Heat Treatment of Okan Wood ( <i>Cylindropuntia Gabunensis</i> ): Effect of Treatment Duration and Clamping on The Color Change, Physical and Mechanical Properties
		13.40-13.50	DISKUSI	
Moderator : Imam Wahyudi				
5.	A2-05	13.50-14.30	Woo-Seok Jeon	Anatomical Characteristics of Stem, Branch, and Root in

### HEAT TREATMENT OF OKAN WOOD (*Cylicodiscus gabunensis*): EFFECT OF TREATMENT DURATION AND CLAMPING ON THE COLOR CHANGE, PHYSICAL AND MECHANICAL PROPERTIES

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#### ABSTRACT

The use of Okan wood (*Cylicodiscus gabunensis*) for decking and flooring in Korea began to rise due to its exotic color and visual appearance that can be further optimized by heat treatment. This study evaluated the color changes, physical and mechanical properties of Okan wood after heat treatment with/without clamp at different treatment duration. Heat treatment of sapwood and heartwood was performed at 180 °C for 1, 2, 3, and 4 h. The results showed that in both sapwood and heartwood with/without clamping, the changes in color appeared mostly by the reduction in lightness ( $L^*$ ) and yellow/blue chromaticity ( $b^*$ ) and the values further decreased with increasing treatment duration, while red/green chromaticity ( $a^*$ ) was not significantly affected by treatment duration. The weight loss and volume shrinkage increased with the increase of treatment duration, while the density of heat treated wood only slightly decreased due to a balance reduction of weight loss and volume shrinkage. Clamping during heat treatment protected wood surfaces from direct contact with heated air, resulted in lower weight loss and volume shrinkage

than samples without clamping. Heat treated wood evidently absorbed less water compared to control as shown by lower equilibrium moisture content and water absorption. In addition, the heartwood of heat treated Okan absorbed less water than sapwood. The mechanical evaluation showed the reduction of modulus of rupture and modulus of elasticity after heat treatment. The application of clamping minimized the strength reduction in both sapwood and heartwood, particularly after heat treatment for 1 and 2 h. Consequently, the treatment duration and clamping contributed significant effect on the properties of heat treated Okan wood.

**Keywords : Heat Treatment, Clamping, Color Change,  
Dimensional Stability Treatment Duration**

### ABSTRACT

*Podocarpus tomentosus* is a fast-growing wood species in Korea. It is considered to be valuable resources for wood supply and carbon absorption in Korea. To get some information on effective utilization, the anatomical characteristics of stem, branch and root of *P. tomentosus* and their application for microfibrillated products were examined. There were significantly different in vessel number, diameter, fiber wall thickness and ray dimension among stem, branch and root woods. The gelatinous layers in fibers were only found in branch wood. The root wood showed indistinct growth ring compared with stem and branch woods. During microfibrillated products preparation, the grinding time in branch wood was shortest among the samples. The filtration time of branch wood was shorter than those of stem and root woods. The passing cycles significantly affected to the dimension of ground products in the three parts of wood, and the dimensions decreased with increasing passing cycles. That is, the fiber length and width of ground samples from branch wood were smaller than those of stem and root woods. The power consumption of branch