The third International Mini-symposium on Wood Science

Towards a Brilliant Future with Wood Science

第３回木材学会国際ミニシンポジウム

木材科学と輝かしい未来に向けて

- Insights into Wood Research in Tropical Asia -

熱帯アジアにおける木材研究の最新動向

Abstract　概要

The timber produced and distributed in Southeast Asia has shifted from species of Dipterocarpaceae harvested in natural forests to plantation species such as teak, acacia, falcata, and etc., which are now more commonly seen in the market. Researchers from the main timber producing countries, Indonesia and Vietnam, will present the current status and achievements of research in each country. In addition, the latest research findings by young Japanese researcher conducting studies on properties of wood growing in tropical Asian forests will also be introduced.

東南アジア地域で生産・流通する木材は、天然林から伐採されるフタバガキ樹種を中心とした木材から、チーク、アカシア、ファルカタなどの造林樹種が増加してきており、現在では市場でも目にする機会が増えています。その主要な木材生産国であるインドネシアとベトナムの研究者に、それぞれの国における研究の現状と成果について紹介していただきます。さらに、熱帯アジアの森林で成長する木材の組織材質に関する研究を行っている日本の若手研究者による最新の研究成果も紹介していただきます。

Dr. Hisashi Abe

Date and Venue 開催日時

Date: 16:00-18:00 (JST), Sunday, March 15, 2026

Venue: TKP Garden City PREMIUM Hiroshima Ekimae 7F room 7A (Bellevue Office Hiroshima, 13-9 Osukacho, Minami-ku, Hiroshima-shi, Hiroshima-ken, Japan)

日時：３月１５日（日）　１６〜１８時

場所：TKP ガーデンシティ PREMIUM 広島駅前７階 ホール 7A

（広島県広島市南区大須賀町 13-9 ベルビュオフィス広島）

Format 開催方法

Hybrid Format

(On-site: Maximum 80 participants)

(Online: Maximum 100 participants)

ハイブリッド形式

（オンサイト：最大８０名）

（オンライン：最大１００名）

TKP Garden City PREMIUM Hiroshima Ekimae

Registration Fee 参加費

Free

無料

Organizing Committee 主催

The Japan Wood Research Society International Committee

日本木材学会 国際委員会

Organizing Sub-Committee 共催

Wood Anatomy and Quality Research Group

日本木材学会 組織と材質研究会

Supporters 後援

International Association of Wood Anatomists (IAWA)

Japan International Research Center for Agricultural Sciences (JIRCAS)

国際木材解剖学者連合

国立研究開発法人 国際農林水産業研究センター

Program

Opening Remarks by the Chair of Wood Anatomy and Quality Research Group
16:00-16:05：Prof. Tatsuya Awano (Kyoto University)

Purpose and Overview
16:05-16:10：Dr. Hisashi Abe (JIRCAS)

Speakers and Titles（25-minute presentation + 5-minute Q&A）
16:10-16:40 (zoom)
・**Dr. Kiyosada Kawai (Japan International Research Center for Agricultural Sciences)**
Diversity in environmental responses and wood properties in timber species of Southeast Asia
（東南アジア林業樹種における環境応答と材質特性の多様性）

16:40-17:10 (zoom)
・**Dr. Nguyen Tu Kim (Vietnamese Academy of Forest Sciences)**
Timber trade and tracking, the cases in Vietnam
（木材取引の管理とマネージメント：ベトナムでの事例）

17:10-17:20：Short break

17:20-17:50 (on-site)
・**Prof. Widyanto Dwi Nugroho (Gadjah Mada University)**
Current status of wood research and industry in Indonesia
（インドネシアにおける近年の木材研究と産業の状況）

Closing Remarks by the Chair of The Japan Wood Research Society International Committee
17:50-17:55：Prof. Mariko Yamasaki (Nagoya University)

Diversity in Environmental Responses and Wood Properties of Southeast Asian Timber Species

Presenter Information

Name: Kiyosada Kawai
Affiliation: Forestry Division, Japan International Research Center for Agricultural Sciences (JIRCAS)
Email: kawaik0136@jircas.go.jp

Abstract

Tropical forests in Southeast Asia contain a range of valuable timber resources that exhibit diverse phenotypes, including growth, eco-physiological traits, and wood properties. These resources hold considerable potential for improving both the environmental adaptability and wood productivity of plantations through appropriate selection and utilization. However, important phenotypes and their underlying patterns and mechanisms remain not fully understood.

In this presentation, I will introduce two recent studies conducted with partner institutions in Southeast Asia. First, I will highlight interspecific variation in eco-physiological responses to soil desiccation among dipterocarp species in Peninsular Malaysia and describe leaf traits that can serve as predictors of drought responses. Second, I will present intraspecific variation in basic wood properties among teak progenies in a plantation in northeastern Thailand, with a particular focus on the patterns and mechanisms underlying heartwood proportion. I will also discuss how insights gained from these studies can contribute to climate-resilient and productive forestry.

Keywords

climate change, Dipterocarpaceae, heartwood proportion, leaf traits, wood properties

Biography of the first author

Highest degree: Ph.D. in Agriculture (March 2019)

Current position: Researcher, Japan International Research Center for Agricultural Sciences (JIRCAS)

Research interests: Environmental responses of tropical tree species, Trait-based ecology,

Wood quality, Xylem anatomy

Major achievements (recent):

- Kawai *et al.* (2025) Predicting Climatic Limits Along a Rainfall Gradient of Dipterocarp Species Based on Leaf Turgor Loss Point. *Biotropica*
- Faridah and Kawai *et al.* (2025) Intraspecific variations in relative growth rate and eco-physiological properties of *Falcataria falcata* (L.) Greuter & R.Rankin seedlings among Southeast Asian and Melanesian populations. *Trees*
- Kawai *et al.* (2023) Size-related changes in leaf, wood, and bark traits in even-aged *Falcataria falcata* trees. *Tropics*
- Kawai *et al.* (2021) Parenchyma underlies the interspecific variation of xylem hydraulics and carbon storage across 15 woody species on a subtropical island in Japan. *Tree Physiology*

Timber trade and tracking, the cases in Vietnam

Presenter Information

Tu Kim NGUYEN
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Abstract

Over the period of 2021–2025, Vietnam's wood industry demonstrated significant resilience and growth despite global economic fluctuations. Export turnover escalated from $14.8 billion in 2021 to a historic $18.5 billion in 2025, positioning Vietnam as the leading exporter in Southeast Asia, second in Asia, and fifth globally. While the United States remains the primary market (over 50% share), followed by China, Japan, and South Korea, a strategic shift occurred in 2025 as Japan surpassed China to become the second-largest destination. This growth is driven by high-end furniture and the rapid expansion of wood pellets and plywood, particularly to support Japan's renewable energy sector under FIT/FIP schemes. Concurrently, the industry is transitioning toward green production to align with EUDR and Net-Zero commitments.

On the supply side, Vietnam imports raw materials valued at $2.5–3.2 billion annually from over 100 countries including China, the USA, and high-risk tropical regions to supplement the 70–75% domestic supply. To manage the annual import of 4 million m^3 of logs and sawn timber, the Vietnamese government has intensified its commitment to timber legality. Following the 2017 natural forest logging ban and international agreements such as VPA/FLEGT in 2018 and the U.S. Timber Legality Agreement in 2021, Vietnam has enforced the Vietnam Timber Legality Assurance System (VNTLAS) under Decree 102/2020/ND-CP and subsequently amended by Decree 120/2024/ND-CP. To ensure supply chain integrity, Vietnam has adopted advanced wood identification technologies. Beyond traditional wood anatomy, the country now utilizes DNA analysis, machine vision systems, and DART-TOFMS (Direct Analysis in Real Time - Time of Flight Mass Spectrometry). These "chemical fingerprinting" techniques, supported by U.S. technology, are critical for eliminating illegal timber and maintaining Vietnam's competitive edge in the stringent global market. In the near future, Vietnam hopes to be able to apply isotope and NIR methods in timber identification.

Biography of the first author

Tu Kim NGUYEN holds a PhD in wood science from Kyushu University, Japan in 2009. He has worked at the Vietnam Academy of Forest Sciences since graduating Vietnam University of Forestry in 1995. His research focuses on biodiversity, plant conservation, wood science, and wood-base products. He has also provided training in wood science and wood-base products for doctoral students, forestry officers, and customs officers. He has published numerous papers related to his research field.

Current status of wood research and industry in Indonesia

Presenter Information

Name: Widyanto Dwi Nugroho
Affiliation: Universitas Gadjah Mada, Faculty of Forestry, Department of Forest Product Technology
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Abstract

Indonesia hosts the third largest tropical rainforest after Brazil and Congo, encompassing approximately 120.4 million hectares designated as forest areas. Forests perform critical ecosystem functions, including microclimate regulation, soil erosion control, water regulation, carbon sequestration, and maintaining ecosystem balance. In addition to these environmental services, forests supply production resources for the wood industry and a variety of non-wood forest products. However, ongoing deforestation in Indonesia has reduced both forest area and quality, undermining the capacity of forests to satisfy timber demand. Optimizing the use of wood as a raw material, selecting the appropriate feedstock, and innovating wood-based technologies and products can increase the added value of forest products while alleviating pressure on forests, thereby contributing to sustainable forest development. Consequently, comprehensive knowledge of wood, from its formation process and basic properties to its potential applications and product innovation, is essential. For these reasons, systematic analysis of research trends in wood science and technology, together with trends in the wood industry, is of strategic importance.

To analyze the global trend of research topics, we extracted bibliographic metadata and abstracts for 20,000 Scopus-indexed articles using the keywords: wood, industries, and forest. Using this metadata, we generated VOSviewer maps through text-based mapping and conducted a bibliometric analysis. The major interest in the research can be visualized in global, regional, and national scopes. To examine the recent condition of the wood industry, we analyzed data on the trends of the wood industry and processed wood products from 2020-2025. The dataset was obtained from the Ministry of Forestry, Republic of Indonesia. The data encompasses information on log production, export destination, export values, commodity types, and the current condition of the wood industry sector. These findings will be presented to highlight both the dynamics of Indonesia's wood industry and its implications for sustainable forest resource utilization.

Keywords

Indonesia, Trend, Wood Industry, Wood Research

Biography of the first author

Widyanto Dwi Nugroho is a Professor in the Department of Forest Product Technology, Faculty of Forestry, Universitas Gadjah Mada, Yogyakarta, Indonesia. Since 2022, he has served as Vice Dean for Academic, Student, and Partnership Affairs at the Graduate School of Universitas Gadjah Mada. He earned his Master's and Ph.D. from Tokyo University of Agriculture and Technology, Japan, in 2009 and 2012, respectively. His principal research interests include wood identification, wood anatomy, wood formation, and wood properties. His recent research projects have focused on the stimulation of agarwood formation, the evaluation of superior clonal teak, reaction wood formation, and wood identification in archeological contexts, museums, and agarwood species.