INBAR
INTERNATIONAL NETWORK FOR BAMBOO & RATTAN

Newsletter

INBAR CONSTRUCTION TASK FORCE

Quarter 1: January - March, 2016 (2016Q1)

THE INTERNATIONAL SYMPOSIUM
Bamboo in the Urban Environment

4-6th May, 2016
The University of Pittsburgh, USA

With support from a US State Department IIE Global Innovation Institute (GII) award, a Symposium entitled 'Bamboo in the Urban Environment' will be held at the University of Pittsburgh, May 4-6, 2016. The symposium and GII project brings together leading experts to discuss the appropriate and safe use of bamboo in urban centres. This collaboration – involving engineering, architecture and forestry researchers from the US, UK, Indonesia, China, Brazil, Colombia and India – will offer technical and social insights to reduce costs and improve the environmental impacts and safety of housing for a significant proportion of the world's population. This work will address the global challenges of urbanization and resilience in the face of natural hazards and climate change through facilitating the use of this renewable 'green' material. Read More

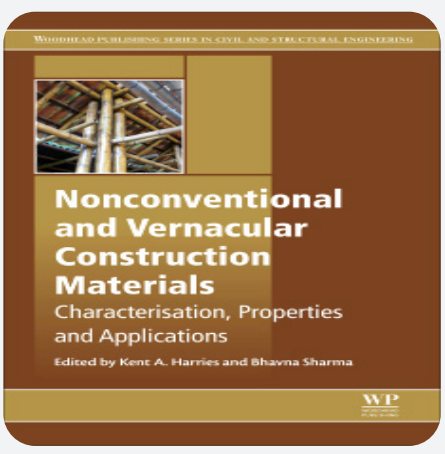
TEDx Talks

Bamboo: 21st century steel

Delivered by David Trujillo

Dr. David Trujillo, of Coventry University and Chair of INBAR's Construction Task Force, delivered a presentation to TEDx in January, demonstrating the potential of bamboo as a practical, low-cost and resilient building material.

New Book



Nonconventional and Vernacular Materials

Edited by Kent Harries and Bhavna Sharma

The book includes three chapters exclusively on bamboo materials and at least three additional chapters of immediate interest to the bamboo community. Chapter authors include Juan Correal, David Trujillo, Yan Xiao, Khosrow Ghavami and Randolph Langenbach.

Research

Experiments on structural applications of bamboo

Two series of experiments were recently carried out by the Shanghai Research Institute of Building Sciences (Group), Co. Ltd (SRIBS), China:

(1) The combustion and charring properties of two types of engineered bamboo for structural applications: laminated bamboo and bamboo scrimber were investigated through cone calorimeter tests conducted at three level of heat flux.

(2) Several strengthening techniques for masonry walls using bamboo were developed, such as bamboo-meshed cement mortar and externally bonded bamboo sheets. Masonry walls strengthened with these techniques were tested and improvements in seismic performance were observed.

The research group in SRIBS is applying for the "National Science and Technology Major Project" on design and technology of bamboo and timber structures.

Provided by Xu Qingfeng

Charring properties of engineered bamboo

Masonry wall strengthened with bamboo-meshed cement mortar

Masonry wall strengthened with bamboo sheets

Project

Low-cost cane, timber and mortar housing for El Salvador

Sebastian Kaminski, Senior Structural Engineer, Arup

A new cost-effective housing solution using bamboo offers low-income communities in El Salvador a practical and safe alternative to conventional homes which tend to be unhygienic, crowded and susceptible to earthquakes.

In El Salvador, hundreds of thousands of people live on only a few dollars a day. Many of them live in crowded, unhygienic and unsafe housing in a highly seismic area. The standard low-cost housing solution in El Salvador is a simple reinforced hollow blockwork house. Whilst this has some advantages, it's relatively expensive, heavy to transport, brittle in earthquakes and not very sustainable.

Over the past six years, Arup (a UK-based engineering consultancy), REDES (an El Salvadoran NGO), and Engage for Development (a UK-based charity), have developed a new low-cost housing solution designed especially for low-income communities in El Salvador. Read More

Journal

Shah, D. U., Bock, M. C. D., Mulligan, H., & Ramage, M. (2016). Thermal conductivity of engineered bamboo composites. Journal of Materials Science, 51(6): 2991–3002. Link

Reynolds, T., Sharma, B., Harries, K., & Ramage, M. (2016). Dowelled structural connections in laminated bamboo and timber. Composites Part B: Engineering, 90(4): 232–240. Link

Liu, X., Smith, G., Jiang, Z., Bock, M., Boeck, F., Frith, O., Gatóo, A., Liu, K., Mulligan, H., Semple, K., Sharma, B., & Ramage, M. (2015). Nomenclature for Engineered Bamboo. BioResources, 11(1), 1141-1161.2015,31(6): 208-217. Link

Xi Chen, Qingfeng Xu, Kent Harries. (2015). Research on mechanical properties and application of bamboo in civil engineering: state-of-the-art. Structural Engineers, 2015,31(6): 208-217. Link

Sharma B, Gatóo A, Ramage M. (2015). Effect of processing methods on the mechanical properties of engineered bamboo. Journal of Construction and Building Materials, 83(5): 95-10. Link

Sharma B, Gatóo A, Bock M, Ramage M. (2015). Engineered Bamboo for structural applications. Journal of Construction and Building Materials, 81(4): 66-73. Link

All the information above is provided by the key experts of INBAR Construction Task Force
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