As the quest for sustainable building materials is gaining momentum, use of Bamboo as a structural item gets more and more prominence. Bamboo in comparison to other Timber species has very fast growth, shorter rotation cycle and vigorous reproduction abilities. Generally, bamboo gets matured for harvest after three-five years period, whereas other fast growing Plantation species need 8-12 years before harvesting. Composite lumbers made from bamboo, termed as Laminated Bamboo Lumber or Scrimber Board, have gained the particular interest of researchers and manufacturers of late, since they retain bamboo’s mechanical properties and can be manufactured in well-defined dimensions, similar to commercially available wood products.

Since it is economically, environmentally and perhaps structurally beneficial to use bamboo in comparison to wood, a few units in India have ventured in to the production of Bamboo Lumber. This is an ideal material for flooring, decking for outdoors, wall cladding along with doors, door frames and custom made furniture similar to wood. It takes good finish and poses a healthy competition to wood in furniture market. IPIRTI is actively engaged in processing locally available bamboo in to Bamboo Lumber. There were initial hiccups to get right kind of machinery and selecting the right bamboo
species suitable for making Bamboo Lumber. After rigorous research and exposure to outside world, things are falling in place.

At present the Scientists of the Institute are in a position to produce Bamboo Lumber in Pilot plant scale in order to address the challenges faced by Industry in this respect.

Kudos IPIRTIANS !!!

**RESEARCH & DEVELOPMENT**

**ASSESSMENT OF RELATIVE TOXICITY OF VARIOUS PANEL PRODUCTS AND STUDY THE TOXICITY INDEX BEHAVIOR OF TREATED AND UNTREATED WOOD BASED PANEL**

The development and increasing use of new synthetic materials in today’s world has led to the release of many toxic chemicals to the environments very rapidly. Some of these chemicals are highly toxic to human. The concern over the danger of inhaling decomposition products has increased in recent years. The question of whether the steady increase in the use of new materials is likely to result in an increase in the life hazard for the occupants of building in the event of fire is of paramount importance. Chemical analysis of decomposition products provides a method of identifying the species primarily responsible for toxic effects. Data thus obtained are vital to the understanding of the problem of fire toxicity.

The assessment of various toxic gases getting released from the panel products gives an indications of the relative importance of toxic gases produced from a given materials and the relative propensity of materials in generating harmful gases and vapors. Hence this study on assessment of relative toxicity of various panel products has been taken up by Ms. Sujatha, Scientist and her team at IPIRTI, Bangalore. The data collected would contribute for understanding the problem of combustion toxicology and also a limit can be set up for the release of these gases depending on the enduse application of the panel products. The toxicity index of commercial plywood, marine grade, shuttering grade and fire retardant plywood was carried out as per the standard procedure of Def Stan 02-713 Issue 2 “Standards for Defence-Determination of Toxicity index of the products of combustion from small specimens of Materials”.

It has been observed that when the material is treated with any kind of preservative or fire retardant chemicals and has higher retention of these chemicals in the panel products, it leads to a higher toxicity index which may lead to serious issues during the course of fire accidents. The commercial plywood made with conventional phenolic resin systems conforms to the toxicity index value of 1 prescribed as per Draft Spec. No. C- 9601 (Rev.-1) of RDSO. From this study, it is concluded that providing treatments to enhance the service life of the panel products and also while making fire retardant panel
LAMINATED VENEER LUMBER FROM MELIA DUBIA

Laminated Veneer Lumber (LVL) is an engineered wood material with defined and reliable strength and stiffness properties. LVL is an engineered, highly predictable, uniform lumber product, because natural defects such as knots, slope of grain and splits have been dispersed throughout the veneer assembly or have been removed altogether. In addition to this, the veneer sheets are placed in a specific sequence and location within the product to maximise the potential of the stiffer and stronger veneer grades. It is suited to a wide range of structural applications, including critical elements such as large span portal frames and primary or secondary beams in commercial buildings.

Melia dubia is known for its suitability for plywood manufacture and suitability of *Melia dubia* for particle board manufacturing is recently studied by Shri. Prakash V. Scientist and his team at IPIRTI, Bangalore. In continuation to this efforts suitability of *Melia dubia* for Laminated Veneer Lumber manufacturing, 50 mm thick laminated veneer lumbers were produced and tested the same as per IS: 14616. It is found out that the LVL from *Melia dubia* conform to IS: 14616.
Testing Facilities Added at IPerti, Bangalore

Fiber Analyser

Wood pulp fibres are gaining increasing interest within several industry sectors. From being used conventionally as the major component in the manufacturing of MDF, fibres are also being utilized as reinforcement in fiber plastic composites, bio-degradable composites. Wood pulp fibres can be manufactured by e.g. thermo-mechanical, chemithermo-mechanical and chemical pulping. Thermo-mechanical pulping (TMP) disrupts the fibre wall structure mechanically. However, a successful utilization of fibres requires a comprehensive understanding of their structure and how their morphologies are affected by a given production procedure and treatment.

An automatic fibre size analyser is installed in the Institute to study the morphology, i.e. the structural appearance of fibres such as length, width, coarseness, kink and curl.

Equipment for Thermo Gravimetric Analysis (TGA)

TGA is a method of thermal analysis in which changes in physical and chemical properties of materials are measured as a function of increasing temperature (with constant heating rate), or as a function of time (with constant temperature and/or constant mass loss).

This is used to determine selected characteristics of materials that exhibit either mass loss or gain due to decomposition, oxidation. It helps us to know the thermal damage behaviour or the thermal stability of the wood based composites.

Common applications of TGA are (1) materials characterization through analysis of characteristic decomposition patterns, (2) studies of degradation mechanisms and reaction kinetics, (3) determination of organic content in a sample, and (4) determination of inorganic (e.g. ash) content in a sample, which
may be useful for corroborating predicted material structures or simply used as a chemical analysis. It is an especially useful technique for the study of polymeric materials, including thermoplastics, thermosets, elastomers, composites, plastic films, fibers, coatings and paints.

**INDUSTRY VISITS:**

17.04.2015: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Bokaro Timber, Jharkhand to rectify the bonding problem and floor level problems during the manufacturing of plywood.

28.04.2015-01.05.2015: Shri. Prakash V., Scientist visited M/s. Green Ply Industries, Kolkata (Kripampur Unit) to give the demonstration on Peeling Lathe settings Knife grinding and also to discuss floor level technical issues.

12.05.2015: Dr. B.N. Mohanty, IFS, Director and Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali visited M/s. Shri Ram Panels, Khanna along with NIPMA President Shri. Naresh Tiwari.

13.05.2015: Dr. B.N. Mohanty, IFS, Director and Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali visited Plywood Industries at Jalandhar & Hoshiarpur in Punjab viz. M/s. Star Ply, M/s. Venus Ply and M/s. Virgo panel along with NIPMA President Shri. Naresh Tiwari.

13.05.2015: Dr. B.N. Mohanty, IFS, Director and Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali visited the proposed Bamboo CFC at Dasuya, Hoshiarpur.

08.06.2015-09.06.2015: Shri. S.C. Sahoo, Scientist visited M/s. Ghatani Industries, Jorhat, Assam to rectify the bonding problem and floor level problem during plywood manufacturing.


24.06.2015: Shri. S.C. Sahoo, Scientist visited M/s.Laxmi Timber, Kolkata for the discussion regarding consultancy project on “Set up of film face unit” at their factory.

MEETINGS/SEMINARS/CONFERENCE

06.04.2015-07.04.2015: Dr. B.N. Mohanty, IFS, Director attended the Conference of the Environment and Forest Ministers of States/UTs chaired by Hon’ble Prime Minister of India at Vigyan Bhawan, New Delhi.

22.04.2015: Dr. B.N. Mohanty, IFS, Director attended the meeting with officials of the MoEF&CC along with Malaysian Delegation at Krishna Conference Hall, Indira Paryavaran Bhawan, New Delhi.

24.04.2015: Dr. B.N. Mohanty, IFS, Director attended the Twentieth Meeting of the Civil Engineering Division Council (CEDC), Bureau of Indian Standards (BIS), Manak Bhawan, New Delhi.

24.04.2015: Dr. B.N. Mohanty, IFS, Director had meeting with Dr. K.P. Subramony, Director, INBAR, New Delhi Region and discussed about Development of novel Bamboo Engineered Products.

06.05.2015: Dr. B.N. Mohanty, IFS, Director headed a Technical Session about “High-end Products from Green-Gold” during Two days IFS Training Workshop at IWST, Bangalore.

09.05.2015: Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali attended the National Conference on Investigative perceptions of the building environment, MAU, Baddi, Solan and gave an oral presentation on “Design and application of Bamboo based composites: A review”.

12.05.2015: Dr. B.N. Mohanty, IFS, Director and Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali attended the Meeting with PCCF (HoFF), Punjab at Mohali to review the progress of Bamboo projects being funded by Punjab Forest Department and discuss the Action Plan for 2015-16.

20.05.2015: Dr. B.N. Mohanty, IFS, Director attended 1st Meeting of the High Level Committee constituted to prepare a Policy for Utilization of IPIRTI R & D Growth Fund (Corpus) under the Chairmanship of the Addl. DGF (FC), Indira Paryavaran Bhawan, New Delhi.
23.05.2015-24.05.2015: Dr. V.K. Upadhyay, Scientist, attended the Conference of the 15th All India People’s Science Congress at Jnana Jyoti Auditorium, Central College Campus, Bangalore.

05.06.2015: Dr. B.N. Mohanty, IFS, Director along with IPIRTI scientists had discussion with Dr. R.S. Prashanth, IFS, Director and Dr. B. Nagarajan, Senior Scientist of IFGTB, Coimbatore about possible collaboration between IPIRTI & IFGTB for genetic improvement of plantation species used for the manufacture of plywood.

10.06.2015: Dr. B.N. Mohanty, IFS, Director organized the meeting chaired by the Shri. Ashok Lavasa, IAS, Secretary to Govt. of India, MoEF&CC, New Delhi for discussion on the “Issues of Agro forestry for the Plywood Industries in Haryana/Punjab” with various Stake Holders viz. Agroforesters, Plywood Manufacturers, Forest Officials at Chandigarh.

11.06.2015: Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali attended the meeting with Director DIC, Punjab regarding space requirement for IPIRTI Centre, Mohali.

20.06.2015-22.06.2015: Dr. Pradeep Kr. Kushwaha, Scientist attended “Bamboo investors meet – Investing in green gold” and gave presentation on “IPIRTI Technologies for Bamboo composites” at RCVP NOROHNA Academy of Administration & Management, Bhopal, Madhya Pradesh hosted by Govt. of Madhya Pradesh with Confederation of Indian Industry (CII) as the knowledge Partner.

23.06.2015-24.06.2015: Dr. V.K. Upadhyay, Scientist met Shri. R.K. Sapra, Addl. PCCF, Haryana, Shri. Ajay Manikthala, President, M/s. Haryana Plywood Association, Shri. Varun Jindal and Shri J.K. Bihani, Yamuna Nagar and had discussion about sources of raw material availability to plywood industries and current status of plywood sector in Yamuna Nagar.

29.06.2015-30.06.2015: Dr. B.N. Mohanty, IFS, Director attended the Training Workshop on “Applicability of 73rd PESA Provisions to Forests (Recent Constitutional Amendments) Conflicts Resolution & Need for Integration with JFM” for IFS Officers in Amity University, Noida.
RESEARCH ADVISORY COMMITTEE (RAC) MEETING:
59th meeting of the Research Advisory Committee (RAC) of IPIRTI held in the Conference Hall at IPIRTI, Bangalore on 29th May, 2015 which was chaired by Shri. Sajjan Bhajanka, President, FIPPI, New Delhi. Dr. B.N. Mohanty, IFS, Director IPIRTI Convened and Co-Chaired the RAC Meeting.

Highlights of RAC Meeting:
At the outset, Dr. B. N. Mohanty, IFS Director, IPIRTI, extended warm welcome to Shri. Sajjan Bhajanka, Chairman and other RAC members, scientists of IPIRTI present in the 59th RAC Meeting of IPIRTI. He requested the committee members to critically review the project proposals before the projects are taken on hand and set the goals for the upcoming research activities of IPIRTI.

Further, Dr. B. N. Mohanty shared his views on the recent visit to Punjab & Haryana states. He mentioned that the industries in these states manufacture plywood largely from two species viz., Eucalyptus and Poplar, which contribute to the core of the plywood and are creating wonders in the field of plywood, particle boards and MDF. He also stated that these plywood industries are indirectly helping in conservation of the natural forests. He said that Bamboo a woody grass, is one of the fastest growing plants in the world. He stated that in China, Vietnam, Taiwan, etc., the industries convert bamboo into panel products. He emphasized that the institute has developed Bamboo Mat Boards and Bamboo Laminates and many panel products with utmost success. Whereas, there is a wide scope to achieve a lot in the field of Bamboo Strand Lumber and Face Veneers. Further, he said that the institute is in the process of establishing contacts with the Rural Development authorities of State Governments in India with the aim of providing technical support in building low cost bamboo based structures. The TRADA technology developed at IPIRTI may be harnessed for mass rural toilets under Swachh Bharat Mission. While drawing the attention of the RAC members on the recent earthquake disaster in Nepal, Dr. Mohanty said that the institute is presenting itself as a low cost construction solution provider for the reconstruction and rehabilitation of the country (Nepal).
Director also brought to the notice of the committee members that two of the senior scientists from IPIRTI have been deputed to China in a training programme where they will learn about the technology of converting bamboo into various advanced panel products.

Shri. Sajjan Bhajanka, Chairman of RAC, thanked the Director for the introduction. While deliberating on the issues which are a matter of immense interest to all the plywood and panel manufacturers, he said that earlier there was scarcity of timber due to which the price of the wood used to be very high. The wood based industries in northern India cannot rely solely on the plantation timber of Eucalyptus and Poplar and the situation of importing of radiata pine, fir, birch, etc., from other countries like Australia, New Zealand and beyond will continue. But now the plantation timber is available sufficiently and is meeting the requirement in the northern as well as in southern India and the prices have also come down to a reasonable level. He mentioned that Eucalyptus and other species are available in plenty and with these the industries are becoming more and more self-sufficient. He elaborated the prudence of being self-sustainable and stressed on the importance of finding out ways of reducing the quantum of import of timber from other countries by finding out the alternatives.

While discussing about the IPIRTI-Industry relationship, the chairman opined that when some project is taken up, IPIRTI should involve the industries in the final phase, so that the problem faced by the industries can be understood and suitable solution be evolved which can result in a good actionable output. Also the Chairman suggested that IPIRTI should adopt new technologies and market the achievements.

Following New Projects (Institute) were approved by the Committee:

- Development of Medium Density Fibre (MDF) board from Plantation grown timber Species *Melia dubia*
- To establish a scarf jointing line for training and study the suitability of plantation grown timbers for producing face veneers.
- Establishment of facility for Bamboo Strand Lumber
- Development of composites using bamboo saw dust and fibres
- Study on the effect of nanoparticles on fire resistance and smoke suppression properties of bamboo mat board and plywood.
- Development of particle board from *Lantana camara*
- Natural and accelerated weathering studies on wood and bamboo based composite materials
- Estimation and Forecasting of Import of wood and wood products in India

The following new sponsored projects were placed before RAC for ratification:

1. Evaluation of Agenda 25 EC (Fipronil) wood preservative chemical against wood borer and termites for plywood and solid wood.
2. Weathering studies on solid wood-phase II& III.
3. Upgradation of the technology on the development of 50mm compregs using dyed veneers of plantation species (Densified Laminated Lumber) on commercial unit sponsored by M/s. Indeutsch International Ltd., Noida.

4. Efficacy study of the Powder resin (UF, MR & BR) by mixing with amino resins to increase the solid content of amino resin adhesive during manufacturing of MR & BWR plywood.

Committee ratified all the above mentioned projects.

The meeting concluded with vote of thanks by Dr. Jagadish Vengala, Scientist.

**BOG MEETING of IPIRTI**

123rd Meeting of the Board of Governors of IPIRTI was held in UT Guest House, Sector-6, Chandigarh on 10th June 2015. The Meeting was chaired by Shri. Ashok Lavasa, IAS, Secretary, Ministry of Environment, Forest & Climate Change, (MoEFCC) Govt. of India & Chairman, IPIRTI BoG, New Delhi. Dr. B.N. Mohanty, IFS, Director convened the meeting.

**Visit to Abroad:**

Ms. Sujatha D. and Shri. Uday D.N., Scientists, IPIRTI, Bangalore have been deputed to attend the “2015 Training Course on Bamboo Development for ITTO Member Countries” sponsored by Ministry of Commerce of China (MOFCOM) and organized by China National Bamboo Research Center (CBRC) from 18th May 2015 to 12th July 2015 at Hangzhou, Zhejiang province of China.

Dr. Vipin Kumar Chawla, Scientist IPIRTI, Bangalore has been deputed to take up the Collaborative
Research Project on “Development of Glued bamboo materials for structural components based on European Standards” at Eberswalde University for Sustainable Development – University of Applied Science (HNEE), Germany from May-October 2015.

EXHIBITIONS
24.04.2015-26.04.2015: Dr. K.Ch. Varadaraju, Scientist IPIRTI, Bangalore visited Wood-Ex Today-2015 held at Trade Centre, Chennai. IPIRTI Stall was set up to exhibit the Products and Technologies developed at IPIRTI.

05.06.2015: Shri. Amitava Sil, Officer-In-charge, Field Station Kolkata participated in the exhibition as Guest of Honour organized by Chlorophyll Environment Foundation, Kolkata on the occasion of World Environment Day-2015.

DIGNATARIES VISITS
09.04.2015: Shri. Lalrinmawaia Ralte, Hon’ble Minister, Environment & Forest Department, Govt. of Mizoram visited IPIRTI to familiarize about the IPIRTI innovations for possible Technology Adoption.

30.04.2015: Shri. K.P. Murthy, Member, Bamboo Society of India along with Shri. T. Ishwar, Chairman, Karnataka State Forest Industries Corporations Ltd. (KSFIC) and Shri. K. Sunder Nayak, President, Bamboo Society of India and two other officials visited IPIRTI for discussing low cost Toilet using IPIRTI-TRADA technology and to adopt possible Institute innovations.

05.05.2015: Shri. R. K. Choudhury, IFS, APCCF (Admin) Punjab visited IPIRTI, Bangalore for discussing Bamboo Lumber Project in his State.

12.05.2015: Shri. Rajesh Munda, M/s. ARCL Director and Shri. U.K. Panda visited IPIRTI Field
Station, Kolkata and had discussion with Shri. S.C. Sahoo, Scientist regarding the sponsoring of project with the institute.

05.06.2015: Dr. R.S. Prashanth, IFS, Director, IFGTB & Dr. B. Nagarajan, Senior Scientist joined the World Environmental Day Celebration and took part in ceremonial plantation at IPIRTI campus and also discussed about the possible collaboration between IPIRTI & IFGTB for the genetic improvement of plantation species used for making plywood.

16.06.2015: Shri. Chandrakant Deo and Shri. P. Ganguly, Proprietor, M/s. Wood Cure Enterprises visited IPIRTI Field Station, Kolkata on 16.06.2015 to discuss regarding the progress of their sponsored project and 18 months termite, borer report of their sponsored project “Modification and efficacy study of wood protector, the eco-friendly wood preservative for glue line treatment during manufacture of plywood”.

23.06.2015: Shri. Nimmala Kristappa, Hon’ble Member of Parliament, Hindupura Constituency, Andhra Pradesh visited IPIRTI to discuss about growth of plywood industries.

25.06.2015: Shri. Kalyan Bannerjee, Director, M/s Hindustan Adhesive visited IPIRTI Field Station, Kolkata for discussion with Shri. S.C. Sahoo regarding the Urea substitute for manufacturing of amino resin as a sponsored project.

26.06.2015: Shri. K. Ramamurthy, Engineer, M/s. BOSCH visited IPIRTI and discussed about IPIRTI-TRADA Technology for low cost School Toilet in Karnataka.

27.06.2015: Shri. R.K Bhiani, Director, M/s. Mridul Chemicals (P) Ltd. visited IPIRTI Field Station, Kolkata for discussion with Shri. S.C. Sahoo regarding the testing of the extender named well bond.

MoU SIGNED

1. A Memorandum of Understanding (MoU) was signed and exchanged between Dr. B.N. Mohanty, IFS, Director, IPIRTI and Shri. M.B. Nambiar, M.D., M/s. Reyami Millennium on “Technology transfer of fire retardant doors”.

2. A Memorandum of Understanding (MoU) was signed and exchanged between IPIRTI and M/s. Saint Gobain India Pvt. Ltd. on “Evaluation of fire ratings of glazed door shutter with fire ratings of 120 minutes” received from the firm.

3. A Memorandum of Understanding (MoU) was signed and exchanged between IPIRTI and
WORLD ENVIRONMENT DAY 2015

“World Environment Day 2015” was celebrated in the Institute on 5th June 2015.

Dr. R.S. Prashanth, Director, IFS, IFGTB and Dr. Nagarajan, Senior Scientist joined the “World Environmental Day” celebration and took part in ceremonial plantation at IPIRTI campus. All the staff members planted different species of plants within the Institute campus.

M/s. Kanara Wood Industries Ltd. on “Evaluation of fire ratings door shutter with fire ratings of 30 & 120 minutes received from the firm.

4. A Memorandum of Understanding (MoU) was signed and exchanged between IPIRTI and M/s. Navair International Pvt. Ltd. on “Evaluation of fire ratings door shutter with fire ratings of 120 minutes” received from the firm.

Patent:

A Patent (No. 266054) has been granted by the Patent Office, Chennai, Govt. of India to IPIRTI, Bangalore on 30.03.2015 for “A Method of Manufacturing Bamboo Mat Corrugated Sheets (BMCS)”.

Dr. B.N. Mohanty, IFS, Director IPIRTI and Dr. R.S. Prashanth, Director, IFGTB Coimbatore planting the saplings in the Institute campus

संस्थान में हिंदी की गतिविधियों

इंपरिटी के 9 कर्मचारियों ने हिंदी "प्रवीण" परीक्षा दी और सभी कर्मचारी उसमें उत्तीर्ण हुए।
ये कर्मचारी पिछले 6 महीनों में हिंदी प्रवीण का प्रशिक्षण ले रहे थे।
एक कर्मचारी ने केंद्रीय हिंदी प्रशिक्षण उप संस्थान द्वारा आयोजित किया गया हिंदी टंकण/शब्द संसाधन प्रशिक्षण में भाग लिया।
चार कर्मचारी हिंदी प्रारंभी की प्रशिक्षण ले रहे हैं।
PGD Course:
26th batch of PGD Course on Wood and Panel Products Technology:
First Semester examination was conducted and result declared. Already Second Semester classes commenced.

Short Term Vocational Training Courses:
16.04.2015: A Short term training course on “Testing of Fire Retardant Plywood as per IS: 5509” was conducted at IPIRTI-Centre, Mohali.

20.04.2015-24.04.2015: A Short term training course on “Testing of Plywood as per IS:303, 1328, 710 & 4990” was conducted at IPIRTI-Centre, Mohali.

15.05.2015: One day short term training course on “Treatment of Bamboo and Bamboo based mat product” was conducted for 10 candidates from M/s. Centre for Green Building Materials and Technology (CGBMT), Bangalore.

**SHORT TERM TRAINING COURSES FROM AUG - DEC, 2015 AT MOHALI**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Title of the Training Course</th>
<th>Duration</th>
<th>Date</th>
<th>Fees (Rs.)</th>
<th>S.Tax (Rs.)</th>
<th>Total (Rs.)</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Testing Of Plywood As Per I:S 303, 1328, 710 &amp; 4990</td>
<td>5 days</td>
<td>August 17-21</td>
<td>5000</td>
<td>700</td>
<td>5700</td>
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<tr>
<td>2.</td>
<td>Testing Of Block board And Flush Door As Per IS:1659 &amp; IS: 2202 (Part - I)</td>
<td>5 days</td>
<td>Sept.07-11</td>
<td>5000</td>
<td>700</td>
<td>5700</td>
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<tr>
<td>3.</td>
<td>Analysis of Raw Material for Resin Manufacturing</td>
<td>5 days</td>
<td>Oct. 05-09</td>
<td>5000</td>
<td>700</td>
<td>5700</td>
</tr>
<tr>
<td>4.</td>
<td>Testing Of Plywood As Per IS 303, 1328, 710 &amp; 4990</td>
<td>5 days</td>
<td>Nov. 02-06</td>
<td>5000</td>
<td>700</td>
<td>5700</td>
</tr>
</tbody>
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* 14% Service Tax
** Lodging and Boarding are not included and have to be arranged by the trainees.
Programme Coordinator: Dr. Ranjana Yadav (ranjana@ipirti.gov.in) IPIRTI Centre (MoEF&CC, Govt of India) B-65, Phase-7, Industrial Area, Mohali-160055, Punjab. Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, IPIRTI, Bangalore. You can apply online by filing and submitting the Registration Form.
## SHORT TERM TRAINING COURSES FROM AUG - DEC, 2015 AT BANGALORE

<table>
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<tr>
<th>Sl. No.</th>
<th>Title Of The Training Course</th>
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<th>Fee</th>
<th>Tax* (Rs.)</th>
<th>Total</th>
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<tbody>
<tr>
<td>1.</td>
<td>Testing Of Plywood and Block Board as Per IS:303,IS:710,IS:1328,IS:4990 And IS:1659</td>
<td>5 Days</td>
<td>Aug 17-21</td>
<td>10000</td>
<td>1,400</td>
<td>11,400</td>
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<td>2.</td>
<td>Preliminary Bamboo Processing</td>
<td>3 Days</td>
<td>Aug 25-27</td>
<td>5000</td>
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<td>3.</td>
<td>Low Cost Phenolic Resins Using Renewable Bio-Materials as Replacement for Phenol</td>
<td>5 Days</td>
<td>Sep 07-11</td>
<td>7500</td>
<td>1,050</td>
<td>8,550</td>
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<tr>
<td>4.</td>
<td>Low Formaldehyde Emission Adhesives for Plywood and Particle Board</td>
<td>5 Days</td>
<td>Oct 05-09</td>
<td>7500</td>
<td>1,050</td>
<td>8,550</td>
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<tr>
<td>5.</td>
<td>Defects and Remedial Measures in Plywood Manufacture</td>
<td>5 Days</td>
<td>Nov 16-20</td>
<td>7500</td>
<td>1,050</td>
<td>8,550</td>
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<tr>
<td>6.</td>
<td>Testing of Plywood and Block Board as Per IS:303,IS:710,IS:1328,IS:4990 And IS:1659</td>
<td>5 Days</td>
<td>Dec 14-18</td>
<td>10000</td>
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* 14% Service Tax

** Programme Coordinator: Dr. V K Upadhyay, Head, IT & SORIT (upadhyay@ipirti.gov.in). You can apply online by filling and submitting the Registration Form (PDF)/Registration Form (doc). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, IPIRTI, Bangalore and sent by post to Post Bag No.2273, Tumkur Road, Yeshwanthpur PO, Bangalore - 560 022.

## SHORT TERM TRAINING COURSES FROM AUG - DEC, 2015 AT KOLKATA

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<th>Fee</th>
<th>Tax* (Rs.)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Testing of Plywood, Block Board, Flush Door</td>
<td>5 days</td>
<td>24- 28 Aug</td>
<td>7,500</td>
<td>1,050</td>
<td>8,550</td>
</tr>
<tr>
<td>2.</td>
<td>One Month Training Course on “Plywood Manufacturing Technology”</td>
<td>01 Month</td>
<td>01- 30 Sep</td>
<td>10,000</td>
<td>1,400</td>
<td>11,400</td>
</tr>
<tr>
<td>3.</td>
<td>Analysis of raw material for resin manufacturing.</td>
<td>3 days</td>
<td>28-30 Oct</td>
<td>5,000</td>
<td>700</td>
<td>5,700</td>
</tr>
<tr>
<td>4.</td>
<td>Low Cost and Special Resin for manufacture of Plywood</td>
<td>5 days</td>
<td>16- 20 Nov</td>
<td>7,500</td>
<td>1,050</td>
<td>8,550</td>
</tr>
<tr>
<td>5.</td>
<td>Preliminary Bamboo Processing</td>
<td>3 days</td>
<td>16- 18 Dec</td>
<td>5,000</td>
<td>700</td>
<td>5,700</td>
</tr>
<tr>
<td>6.</td>
<td>Plywood and Adhesive manufacturing</td>
<td>3 days</td>
<td>28- 30 Dec</td>
<td>5,000</td>
<td>700</td>
<td>5,700</td>
</tr>
</tbody>
</table>

* 14% Service Tax

Programme Coordinator: Mr. Amitava Sil, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tele Fax:033-24983120, Mob:09874219758 (ipirti@vsnl.net). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, Indian Plywood Industries Research & Training Institute. You can apply online by filing and submitting the Registration Form.
A Tribute

“IPIRTI NEWS” Records with profound sorrow the sad demise of Shri. K.Damodaran, Ex-Senior Scientist of IPIRTI, Bangalore on 26th May 2015

Shri. K. Damodaran, Senior Scientist retired from service on 30.4.2001

His services and contributions (especially in the field of Sawmilling and Product Application and Development) to the Institute will be fondly remembered.

Shri. K. Damodaran was a person of great humility and was always cordial with the Scientists and all other staff members of this Institute.

May his Soul rest in Eternal Peace.

CAMPUS INTERVIEW AT IPIRTI, BANGALORE

IPIRTI is an Autonomous Research and Training Institute of the Ministry of Environment, Forest & Climate Change, Government of India. IPIRTI is the only training institute of its type in the country in the field of Wood and Panel Products Technology. In addition to Short Term Training Course IPIRTI conducts One Year PGD Course.

This year 18 number of trainees are undergoing the PGDC-WPPT course (26th batch). Campus interview for the successful trainees will be arranged on 28th October 2015 at IPIRTI Campus. Wood based Industries in need of trained persons in middle management Cadre may write to Dr. V.K.Upadhyay, Head SORIT Division, IPIRTI, Bangalore. Tel. No. 080-30534049, E-mail to upadhyay@ipirti.gov.in