Dear Readers

**IPIRTI INNOVATION FOR CHANNAPATNA TOY CRAFTS**

IPIRTI continues to remain an organisation with persistent drive for innovations and/or improving the process technology for the panel manufacturing industry. In the nearby area of Channapatna, the wooden toys from *Wrightia tinctoria* species are world famous and the entire industry is run in small scale sector through the enterprises of the skilled Artisans. While shaping the small wood for toys, a lot of dusts are produced which go as waste leading to the problem of disposal and environmental pollution. This necessitated scouting an alternative means for the utilisation of the dusts. The biggest challenge is to transform this undesirable waste into an array of attractive products which are functional and aesthetically pleasing. IPIRTI through its in-house R&D in a short period of time developed a technology similar to Particle Board for making useful products like tray or flat boards. These flat boards having requisite density, strength and finish can be further converted into various high-end products for further income and commerce. Side by side, IPIRTI through its Extension Wing indulges in seeding and catalysing new training programmes for the upcoming entrepreneurs. During the last quarter the new Training programme for the artisans of Channapatna toy makers was conducted to utilise the waste dusts as flat boards and trays. This training programme garnered a healthy response from the artisans as it not only provided them the technical guidance but also generated wide knowledge about the utilisation of the waste materials. In order to give greater impetus to the development of these products and generate interest among the connoisseurs this technology was displayed in the recent 103rd Indian Science Congress held at Mysore during January 2016.

Dr. B. N. Mohanty, IFS  
Director, IPIRTI
A Study on the effect of Density variation through thickness on properties of three layer Particle Board

A study was carried out to find the effect of density variation through thickness on physical and mechanical properties of three layer particle board by Shri. Anand Nandanwar, Scientist and his team at IPIRTI, Bengaluru. The density of particle board was correlated with different physical and mechanical properties viz. water absorption, swelling in thickness, Modulus of Elasticity (MoE), Modulus of Rupture (MoR), Internal Bond strength (IB) and screw holding strength of particle boards. From the study, it was observed that the strength increases with increase in mean density of particle board whereas higher swelling and water absorption is observed in boards with comparatively lower densities. Density at face of three layer particle board plays an important role in resisting bending stress thus increasing MoR and MoE of boards, whereas density at core is important in increasing Internal bond strength and screw withdrawal strength at edge. It is also seen that with increasing density of particle board resistance to water absorption and swelling is increased.

Study on Trend Analysis of Wood based Panels in India

This study offers a brief overview of wood based panels productions, exports and imports of India during the year 1990 to 2013. During this period 71.4% of total world wood based panel production has come mainly from 10 countries, in which China has contributed 1069 million m³ (21.47%) and USA 937.2 million m³ (18.83%) with first and second position in the world. Whereas India has produced 39.14 million m³ wood based panels accounting to 0.79% of the global share. The current scenario shows that production of Indian wood-based panel is 3.39 million m³ in 2013. India has registered an increase in production of wood based panels with Compound Annual Growth Rate (CAGR) 10.52%.
The CAGR on import of wood based panels during 1990-2013 was 24.54% (Quantity) & 25.1% (Value) whereas Export was 9.66% (Quantity) & 11.97% (Value). The statistical parameters such as descriptive analysis, trends, graph and regression analysis and Autoregressive Integrated Moving Average (ARIMA) have been computed to understand the trend of production, export and import of wood based panels. In this study ARIMA (0,1,2) with $R^2: 0.95$ for the production, MA (2) with $R^2: 0.50$ for the export and ARIMA (0,1,2) with $R^2: 0.93$ for the import were found to be suitable models for forecasting. According to the study made by Dr. V.K. Upadhyay and his team at IPIRTI, Bangalore, it has been estimated that India will be producing 5.16 million m$^3$ of wood based panels whereas import is expected at 1.87 million m$^3$ and the export will be 0.239 million m$^3$ by the year 2020. The major importing countries of Wood based panels from India are UAE, USA, Turkey, Sri Lanka, Bangladesh, Saudi Arab & Nepal and major exporting countries to India are Malaysia, China, Indonesia, Thailand and Bhutan.

**EXTENSION**

MoU signed:

MoUs were signed with the firms for the Consultancy Projects on Evaluation of fire rating of Fire rated door shutters by Dr. B.N. Mohanty, IFS, Director, IPIRTI as follows:

1. CP/31/Testing/2016: Evaluation of fire rating of door shutter with fire rating of 60 minutes received from M/s. Bloom Décor Pvt Ltd., Ahmedabad.

2. CP/32/Testing/2016: Evaluation of fire rating of door shutter with fire rating of 120 minutes received from M/s. MSBC Secure India Pvt. Ltd., Ahmedabad.

3. CP/33/Testing/2016: Evaluation of fire rating of door shutter with fire rating of 120 minutes received from M/s. Relcon Infra Projects Ltd., Andheri (West), Mumbai.

4. CP/34/Testing/2016: Evaluation of fire rating of door shutter with fire rating of 60 minutes received from M/s. Shreeji Wood Craft (Pvt) Ltd., Borivali (East), Mumbai.

5. CP/35/Testing/2016: Evaluation of fire rating of door shutter with fire rating of 60 minutes received from M/s. Kailash Timer Industries Ltd., Thane (W), Mumbai.
INDUSTRY VISITS:
06.01.2016: Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali visited M/s. Vidhata Industries Pvt. Ltd, Ludhiana to solve floor level problems in plywood manufacturing.

07.01.2016: Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali visited M/s. Shri Ram Panel, Khanna to solve floor level problems in plywood manufacturing.


21.01.2016: Shri S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. ARCL Organic Ltd., Kolkata for discussion regarding pilot plant trial of the ongoing sponsored project and on the high shelf life liquid UF resin development for new sponsored project.

30.01.2016: Ms. Sujatha D. and Mrs. Mamatha B.S., Scientists carried out trials on the manufacturing of plywood using Blocked isocyanate resin at M/s. Hunsply manufacturing unit at Hunsur.

03.02.2016: Dr. B.N. Mohanty, IFS, Director visited M/s. Hunsur Plywood Works for understanding the utilization of plantation timber Melia dubia in manufacture of Plywood & other panel products.

04.02.2016: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Shree Bhabani Plywood, Palashbari, Assam to improve the qualities of the plywood and to solve the floor level problems faced by them during plywood manufacturing.

25-26.02.2016: Shri. Amitava Sil, Officer-In-Charge, IPIRTI Field Station, Kolkata visited to North Eastern Council (NEC), Ministry of Development of North Eastern Region, Shillong and Central Academy for State Forest Service (CASFoS), MoEF&CC, Burnihat, Assam. Had discussion with Shri. Gautam Chintey, Adviser (Industries, Tourism, Banking) and Shri. N. Luikham, IFS, Principal, CASFoS respectively regarding development of Bamboo Technology Park on the land given to NEC by CASFoS. Further he visited Cane and Bamboo Technology Park at Burnihat, Assam which is developed by implementing agency Cane and Bamboo Training Centre of NEC. Had further discussion with Shri. H.P. Singh, Deputy Manager Training, Shri. Tamriyo Longvah, Assistant Manager (Marketing) and Shri. Par-
amanada Mali, Research Officer, Shri. Anjal Goswami, Dy. Manager (Housing & Construction) regarding facilities developed at the bamboo park.

02.03.2016: To review the discussion, Dr. Manoj Kumar Dubey, Joint Director accompanying Shri. Amitava Sil, Officer-In-Charge, IPIRTI Field Station, Kolkata visited Cane and Bamboo Technology Park at Burnihat, Assam and had a discussion with officials of implementing agency of NEC M/s. Cane and Bamboo Training Centre and moved to Central Academy for State Forest Service (CASFoS), MoEF&CC, Burnihat, Assam and had a discussion with Shri. N.Luikham, IFS, Principal, CASFoS regarding future work on Bamboo Technology Park on the land given to NEC.

02.03.2016: Dr. Manoj Kumar Dubey, Joint Director and Shri. Amitava Sil, Officer-In-Charge, IPIRTI Field Station, Kolkata visited M/s. Timpack Pvt. Ltd, Byrnihat, Meghalaya and had a discussion with Shri. Angad Singh Bhusri, Senior Executive about the production of Bamboo Mat Corrugated Sheet.

03.03.2016: Dr. Manoj Kumar Dubey, Joint Director and Shri. Amitava Sil, Officer-In-Charge, IPIRTI Field Station, Kolkata visited North Eastern Council, Ministry of Development of North Eastern Region, Shillong and had a detailed discussion with Shri. Gautam Chintey, Adviser (Industries, Tourism, Banking) regarding improvement of quality of Bamboo in North Eastern States through cultivation of good bamboo species.

08.03.2016: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Shakambari Aromatic Pvt. Ltd., Kolkata for discussion on finalization of sponsored project titled “Efficacy study of the phenol isolated from coal tar for manufacturing of phenolic resin by Full/partial substitution of synthetic phenol and suitability of manufacturing of BWP Plywood.”

11.03.2016: Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Sylvan Plyboard (I) Pvt. Ltd, West Bengal to improve the qualities of the plywood and to solve the floor level problems faced by them during manufacturing.

16.03.2016: Mrs. Riya Tudu Solanki, Scientist, IPIRTI Field Station, Kolkata visited M/s. Century Plyboards Ltd, Kolkata to give opinion for setting up a Biology Laboratory in the factory.
MEETINGS/SEMINARS/CONFERENCES

20.01.2016: Dr. B.N. Mohanty, IFS, Director attended a Meeting with ADGF(FC) at MoEF&CC about draft guidelines for the State Level Committee for Wood based Industries in the country.

02.02.2016: Dr. Manoj Kumar Dubey, Joint Director, Shri. Kiran M.C. and Dr. K. Ch. Varadarajulu Scientists had meeting with officials of M/s. L&T Technology Services Ltd. regarding testing of wooden flush door as per Indian Standards.

04.02.2016: As per the guidelines received from MoEF&CC and in pursuance of Section 4 (2) of The Sexual Harassment of Women at Working Place (Prevention, Prohibition and Redressal) Act, 2013, an Internal Complaint Committee (ICC) has been constituted for IPIRTI, Bangalore. In this connection, one day awareness training programme on “Sexual Harassment to Women at work places” was organized at IPIRTI, Bengaluru on 04.02.2016. The training was given by Shri. Niraj Nirmal, Advocate & NGO Member and the external member of the committee. Dr. B.N. Mohanty, IFS, Director, Dr. Manoj Kumar Dubey, Joint Director and all the staff of IPIRTI participated in the training programme.

52\textsuperscript{nd} Annual General Meeting (AGM) of IPIRTI

Dr. B.N. Mohanty, IFS, Director convened the 52\textsuperscript{nd} Annual General Meeting (AGM) of Indian Plywood Industries Research & Training Institute (IPIRTI) Society held at TEESTA Conference Hall, Indira Parvavaran Bhavan, MoEF&CC, New Delhi on 17\textsuperscript{th} February, 2016. Shri. Prakash Javadekar, Hon’ble Minister (Independent Incharge) for Environment, Forests and Climate Change, Government of India chaired the meeting. Ms. Sujatha D., Shri. Uday D.N., Mrs. Mamatha B.S., Shri. Amitava Sil and Dr. Ranjana Yadav, Scientists attended the meeting.
Highlights of the Meeting:

i) A “Bamboo Veneer Bag” an Innovative Product of IPIRTI has been released by the Hon’ble Minister.

ii) A video CD on “Melia dubia for plywood: A Success story of Karnataka” prepared by IPIRTI has been released by the Hon’ble Minister.

iii) Shri. B. S. Raghunath, a progressive farmer and former President of Zilla Panchayath, Chitradurga and Shri. M. Bhupathy, Managing Trustee, M/s. Shilpa Trust Company Ltd., Channapatna were honoured and awarded Certificates of Appreciation by the Hon’ble Minister for their contribution in the field of Melia dubia plantation and making craft items using wooden dust respectively.

iv) Shri. Issaac Emmanuel, Industrial Marketing Head, M/s. Covestro (India) Private Limited, Thane has played a video clip related to Eco-Toilet constructed using Agro waste on the concept of Swachh Bharath.

The Hon’ble Minister appreciated the Model Bamboo House prepared by IPIRTI and other Bamboo furnitures like Sofa etc. being manufactured by entrepreneurs in India at present. He also highlighted the activities of the IPIRTI and its significant Role in the Research and Development for bringing out new Technology for Panel Industry. The new formula for Research Institutes should be “carrying out Research, earning Money, providing funding support to run the Institute and again continuing with further Research” as opined by the Hon’ble Minister. IPIRTI has implemented this formula successfully and other Research Institutes should follow this example in the interest of Research and Development in the country.
21.02.2016: Dr. B.N. Mohanty, IFS, Director had meeting with Shri. P.H.G. Reddy, Vice President, M/s. Kanara Wood & Plywood Industries Ltd., Jeppu, Mangalore followed by visit to the factory, Port Trust Depots, etc for Understanding Import based Panel Industry in Karnataka.

22.02.2016-26.02.2016: Dr. Ranjana Yadav, Officer In-charge, IPIRTI-Centre, Mohali attended the Department of Science & Technology (DST) sponsored training program on Climate Change and Carbon Mitigation at ICFRE, Dehradun.


25.02.2016: The Condolence meeting was conducted by Director, IPIRTI with his staff for Late Shri. V. Ramakrishna (Ramu) the Veteran Wood Technologist at IPIRTI, Bengaluru.

21.03.2016-22.03.2016: Dr. B.N. Mohanty, IFS, Director and Shri. Anand Nandanwar, Scientist presented a paper on” Bamboo based housing technology developed at IPIRTI” in the International Seminar on “Emerging Building Materials and Construction Technologies” organized by BMTPC at Stein Auditorium, India Habitat Centre, New Delhi.

24.03.2016: Dr. B.N. Mohanty, IFS, Director chaired the Pre-thesis viva-voce of Shri. Ganesh Gopal T.M., Research Scholar under the guidance of Dr. S.K. Nath, M/s. Greenply Industries.

28.03.2016: Under Swachh Bharat Mission, Swachhata drive has been initiated in this Institute and observing as Swachhata Day on last friday of every month. All the staff...
members including PGDC students actively participated under the supervision of Dr. B.N. Mohanty, IFS, Director.

29.03.2016: Dr. B.N. Mohanty, IFS, Director chaired the CED-20 meeting of Bureau of Indian Standards (BIS) held at IPIRTI, Bengaluru. Dr. Manoj Kumar Dubey, Joint Director, Ms. Sujatha D., Shri. Anand Nandanwar and Shri. Narasimhamurthy, Scientists attended the meeting as a Committee Member of CED:20.

29.03.2016: Dr. Vipin K. Chawla, Scientist attended the Knowledge Sharing Workshop on “Climate Change” at The Capitol Hotel, Bangalore.

Visit of Dignitaries:

05.01.2016: 15 IFS Probationers from Indira Gandhi National Forest Academy (IGNFA), Dehra Dun visited IPIRTI, Bengaluru. Dr. B.N. Mohanty, IFS, Director addressed the Probationers and briefed about the Research and Developmental activities of IPIRTI.

13.01.2016: 34 officers of Central Academy for State Forest Service (CASFoS), Coimbatore visited IPIRTI, Bengaluru. Dr. B.N. Mohanty, IFS, Director addressed the Officers and briefed about the Research & Training Activities of IPIRTI.

28.01.2016: Shri. R.K. Bhiani, Director, M/s. Mridul Chemicals, Kolkata visited IPIRTI Field Station, Kolkata to discuss with Shri. S.C. Sahoo, Scientist regarding the testing of the extender (Well bond).
04.02.2016: Shri. S.S. Ladhar, Additional Director and Dr. Kamal Preet Kaur, Principal Scientist, Punjab State Council for Science and Technology, Chandigarh visited IPIRTI Centre, Mohali to know about the use of paddy straw for making particle board.

18.02.2016: Shri. Arun Choudhury, Director, M/s. Sudha Industries visited IPIRTI Field Station, Kolkata to discuss the study of termite and borer.

25.02.2016: Shri. Subhrangu Bagchi, Director, M/s. S. Karlobandhan, Kolkata visited IPIRTI Field Station, Kolkata for discussion regarding to improve the quality of PVAc adhesive.

25.02.2016: Shri. Haresh Ajbani, Director, M/s. Vritti Impex Pvt. Ltd., Mumbai visited IPIRTI, Bengaluru and had meeting with Dr. B.N. Mohanty, IFS, Director about Panel products issues.

26.02.2016: Dr. R.N. Kumar, Consultant and Shri. P.K. Mayan Mohamed, Managing Director, M/s. The Western India Plywoods Ltd., Kannur visited IPIRTI, Bengaluru and had meeting with Dr. B.N. Mohanty, IFS, Director and discussed about the Panel product issues and possible collaboration.


02.03.2016: Shri. Manoj Dhandaria, Director, M/s. Shakambari Aromatics Pvt. Ltd, Kolkata visited IPIRTI Field Station, Kolkata for discussion with Shri. S.C. Sahoo, Scientist regarding sponsorship of project entitled “Efficacy study of the phenol isolated from coal tar for manufacturing of phenolic resin by Full/partial substitution of synthetic phenol and suitability of manufacturing of BWP Plywood”.

11.03.2016: Shri. Rajesh Mundra, Director and Shri. U.K. Panda, of M/s. ARCL, Kolkata visited IPIRTI Field Station, Kolkata for discussion regarding the progress of sponsored project.

16.03.2016: Shri. Isaac Emmanuel and Shri. Robin Jacob Joseph officials from M/s. Covestro (India) Pvt. Ltd. visited IPIRTI, Bengaluru and had discussion about PMDI resin issues with Dr. B.N. Mohanty, IFS, Director and Ms. Sujatha, Scientist.

16.03.2016: Shri. Sanjeev Shashikant Karpe, BoG Member visited IPIRTI, Bengaluru and had discussion with Dr. B.N. Mohanty, IFS, Director about Bamboo Development and furniture out of composites.

23.03.2016: Mrs. Sudha Bagade, Director, M/s. Trade India International, Kolkata visited IPIRTI Field Station, Kolkata and had discussion with Shri. S.C. Sahoo, Scientist regarding the development of acrylamide based adhesive for green veneer taping.
24.03.2016: A group of Forest officials from Tamil Nadu Forest Department visited IPIRTI, Bengaluru. Dr. B.N. Mohanty, IFS, Director addressed Forest Officials and briefed about Plywood & Panel products.

24.03.2016: Shri. Chandrakant Deo, Partner, M/s. Wood Cure Enterprises visited IPIRTI Field Station, Kolkata for discussion regarding the progress of their sponsored project entitled “Modification and efficacy study of wood protector, the eco friendly wood preservative for glue line treatment during manufacture of plywood” and about the 24 months report for termite and borer.

**Exhibition**

**Indian Science Congress**

Dr. B.N. Mohanty, IFS, Director, IPIRTI attended the Inaugural Session of 103rd Indian Science Congress, 2016 graced by the Hon’ble Prime Minister of India, Shri. Narendra Modi held at Mysuru University on 03.01.2016. Shri. K. Thanigai, Mrs. Mamatha B.S., & Shri. Kalyan Chakravarthy represented IPIRTI and exhibited products developed by the Institute at Indian Science Congress from 1-7 January, 2016.

**Destination North East 2016**

Dr. Vipin Kumar Chawla, Scientist and Shri. Srinivasamurthy, Technical Staff participated and exhibited the products developed at IPIRTI in a Mega event “Destination North East 2016” at Pragati Maidan, New Delhi during 12-14 February, 2016 organised by Ministry of Development of North Eastern Regions.

**IWST Bamboo Exhibition**

Shri. K. Thanigai, Scientist, showcased the IPIRTI products in the National Bamboo Seminar and Exhibition organized by the Institute of Wood Science and Technology, Bengaluru during 22-23 February, 2016.

**India Wood 2016**

Dr. B.N. Mohanty, IFS, Director attended the Inaugural session of ‘India Wood’ 2016 on 25.02.2016 at Bengaluru International Exhibition Centre (BIEC), Bengaluru. Shri. K. Thanigai, Scientist, showcased the IPIRTI technologies and products at BIEC from 25-29 February, 2016.
One Year Post Graduate Diploma Course in Wood and Panel Products Technology

The 27th Batch of One year Post Graduate Diploma Course in Wood and Panel Products Technology is in progress and 31 trainees are undergoing the training.

Short Term Vocational Training Courses:

20.01.2016-19.02.2016: One month training course on “Plywood Manufacturing Technology” was conducted for five candidates at IPIRTI Field Station, Kolkata. Shri. S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. B.S. Progressive Pvt. Ltd, Kolkata accompanying trainees for demonstration.

01.02.2016-05.02.2016: Five days training course on “Defects and Remedial measures in plywood manufacture” was conducted for four candidates at IPIRTI, Bengaluru.

01.02.2016-05.02.2016: Five days training course on “Testing of Plywood and Block board as per IS-303, 710, 4990 and 1659” was conducted for candidates sponsored from Plywood Industries at IPIRTI, Bengaluru.

07.03.2016-11.03.2016: Five days training course on “Testing of Panel Products” was conducted for Technical staff of Coir Composites at IPIRTI, Bengaluru.

28.03.2016-01.04.2016: Five days training course on “Testing of Plywood, Block Board and Flush Door” was conducted for two candidates at IPIRTI Field Station, Kolkata.

Special training course:

One day training programme on “Primary Processing of Bamboo” was conducted by Dr. Vipin K. Chawla, Scientist for Artisans/Entrepreneurs from Entrepreneurship Development Institute of India (EDI), Ahmedabad at IPIRTI, Bengaluru on 08.03.2016.
**Bamboo Housing Training Programme at State Institute of Rural Development, Nongsder, Meghalaya**

Under the Skill Development Training Programme, an initiative has been taken by Dr. B.N. Mohanty, IFS, Director, IPIRTI for providing green, cost effective durable and earthquake resistant Bamboo Housing Technology for mass rural housing. Rural Development Department, Govt. of Meghalaya has given their consent for organizing a training programme at Meghalaya. A ten days Training Programme on Bamboo based housing system for the rural people of Meghalaya was conducted during 23rd February to 4th March, 2016 by Shri. Amitava Sil, Scientist, IPIRTI and his team which was organized by State Institute of Rural Development (SIRD), Nongsder, Meghalaya. Shri. Banteilang Rumnong, Deputy Director, SIRD, introduced all the trainees which comprises of 24 nos. of trainees including 4 Engineers. A presentation was given by Shri. Amitava Sil, Scientist, IPIRTI on “Green building with bamboo- a material of the future”. The site for construction of 8ft x 8ft full scale bamboo model house for giving practical demonstration was at a village about 35 km from SIRD named Nongbah Myrdon under Ri-bhoi district, Meghalaya at a slope of a hill. Training was given on preservative treatment of bamboo, foundation work, bamboo based grid walling system, fabrication of bamboo trusses, erection of trusses, mesh concealed cement mortar plastering and fixing of roofing materials.

Dr. Manoj Kumar Dubey, Joint Director, IPIRTI, Bengaluru also visited the training site on 2nd and 3rd of March 2016 to review the Training programme. He reported that there were about 24 participants including about 4 mechanical and civil engineers of SIRD. All the participants responded favourably for the training. Language was identified as a major barrier in the training (only 5 out of 24 participants can understand English/Hindi and also assisting in interpretation). This suggests, IPIRTI may emphasize on training of trainers in native language.

The head of the Nongbah Myrdon was also very supportive during the training and wish to build a Bamboo based classroom in the village. Couple of other officials of Govt. of Meghalaya also visited the constructed hut and expressed keen interest in the bamboo based structure as well as IPIRTI and its different roles.

At the closing session of the training course, Shri. T. Lyngwa, Director, SIRD and Joint Secretary, Community and Rural Development Department, Govt of Meghalaya welcomed all the trainees and thanked the team of IPIRTI for giving a apprehensive training to the rural people of Meghalaya. A short presentation was done by Shri. Amitava Sil, Scientist, IPIRTI on “Energy Efficient Bamboo Based Housing System”. From the feedback of trainees, they all liked the construction procedure of bamboo based housing system.
<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>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Peeling &amp; Knife Grinding</td>
<td>3 Days</td>
<td>May 18-20</td>
<td>5000</td>
<td>725</td>
<td>5,725</td>
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<td>2.</td>
<td>Wood Seasoning</td>
<td>3 Days</td>
<td>May 25-27</td>
<td>5000</td>
<td>725</td>
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<td>3.</td>
<td>Testing Of Flush Door And Block Board As Per IS:2202 And IS:1659</td>
<td>5 Days</td>
<td>Jun 06-10</td>
<td>10000</td>
<td>1425</td>
<td>11,425</td>
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<td>4.</td>
<td>Plywood Manufacturing-I ( Log Storage, Centering, Peeling, Clipping, Drying, Knife Grinding)</td>
<td>5 Days</td>
<td>Jul 11-15</td>
<td>7500</td>
<td>1088</td>
<td>8,588</td>
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<tr>
<td>5.</td>
<td>Plywood Manufacturing- II ( Adhesives For Plywood And Plywood Manufacturing-Resin Preparation, Gluing, Hot Pressing)</td>
<td>5 Days</td>
<td>Jul 18-22</td>
<td>7500</td>
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<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>Aug 01-05</td>
<td>10000</td>
<td>1425</td>
<td>11,425</td>
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<td>7.</td>
<td>Preliminary Bamboo Processing and Bamboo preservations</td>
<td>2 Days</td>
<td>Aug 22-23</td>
<td>3000</td>
<td>435</td>
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<td>8.</td>
<td>Bamboo Composites Technology (Mat &amp; Strip based products)</td>
<td>3 Days</td>
<td>Aug 24-26</td>
<td>5000</td>
<td>725</td>
<td>5,725</td>
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<td>9.</td>
<td>Low Cost Phenolic Resins Using Renewable Bio Materials As Replacement For Phenol</td>
<td>5 Days</td>
<td>Sep 19-23</td>
<td>7500</td>
<td>1088</td>
<td>8,588</td>
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<td>10.</td>
<td>Low Formaldehyde Emission Adhesives For Plywood And Particle Board</td>
<td>5 Days</td>
<td>Oct 03-07</td>
<td>7500</td>
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<td>8,588</td>
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* 14.5% 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.

**SHORTTERM TRAINING COURSES FOR MAY - DEC, 2016 AT KOLKATA**

<table>
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<th>Sl. No</th>
<th>Title of the Training Course</th>
<th>Duration</th>
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<th>S.Tax* (Rs.)</th>
<th>Total (Rs.)</th>
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<tr>
<td>1.</td>
<td>Particle Board Manufacturing</td>
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<td>23 – 27 May</td>
<td>7,500</td>
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<td>2.</td>
<td>Block Board &amp; Flush Door Manufacturing</td>
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<td>20 – 24 Jun</td>
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<td>8,588</td>
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<td>3.</td>
<td>Low Formaldehyde emission adhesives for plywood and particle board</td>
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<td>27 – 29 July</td>
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<td>4.</td>
<td>Retention of Preservative Chemical</td>
<td>5 days</td>
<td>22- 26 Aug</td>
<td>10,000</td>
<td>1450</td>
<td>11,450</td>
</tr>
</tbody>
</table>
5. One Month Training Course on “Plywood Manufacturing Technology” 1 month 01-31 Sep 7,500 1088 8,588
6. Testing of Plywood, Block Board, Flush Door 5 days 19-23 Sep 7,500 1088 8,588
7. Analysis of raw material for resin manufacturing 3 days 26-28 Oct 5,000 725 5,725
8. Low Cost and Special Resin for manufacture of Plywood 5 days 21-25 Nov 7,500 1088 8,588
9. Preliminary Bamboo Processing 3 days 07-09 Dec 5,000 725 5,725
10. Plywood and Adhesive manufacturing 3 days 21-23 Dec 5,000 725 5,725

*14.5% Service Tax ; Programme Coordinator: Mr. Amitava Sil, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tel:033-24983120, Mob:09874219758 (ipirtikolkata@ipirti.gov.in). 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.

SHORT TERM TRAINING COURSES FOR MAY - DEC, 2016 AT MOHALI

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Title of the Training Course</th>
<th>Duration</th>
<th>Date</th>
<th>Fees</th>
<th>S.Tax* (Rs.)</th>
<th>Total (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Analysis of Raw Material and Resin Manufacturing (PF &amp; UF)</td>
<td>5 days</td>
<td>02-06 May</td>
<td>7,500</td>
<td>1088</td>
<td>8,588</td>
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<tr>
<td>2.</td>
<td>Analysis of Raw Material</td>
<td>3 days</td>
<td>07-09 Jun</td>
<td>5000</td>
<td>725</td>
<td>5,725</td>
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<tr>
<td>3.</td>
<td>Retention Of Preservative Chemical</td>
<td>5 days</td>
<td>11-15 Jul</td>
<td>6,000</td>
<td>870</td>
<td>6,870</td>
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<td>4.</td>
<td>Testing Of Plywood As Per IS: 303, 1328, 710 &amp; 4990</td>
<td>5 days</td>
<td>01-05 Aug</td>
<td>6,000</td>
<td>870</td>
<td>6,870</td>
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<tr>
<td>5.</td>
<td>Testing Of Block board And Flush Door As Per IS:1659 &amp; IS: 2202 (Part - I)</td>
<td>3 days</td>
<td>21-23 Sep</td>
<td>5,000</td>
<td>725</td>
<td>5,725</td>
</tr>
<tr>
<td>6.</td>
<td>Analysis of Raw Material for Resin Manufacturing</td>
<td>5 days</td>
<td>03-07 Oct</td>
<td>7,500</td>
<td>1088</td>
<td>8,588</td>
</tr>
<tr>
<td>7.</td>
<td>Testing Of Plywood As Per IS 303, 1328, 710 &amp; 4990</td>
<td>5 days</td>
<td>07-11 Nov</td>
<td>5,000</td>
<td>725</td>
<td>5,725</td>
</tr>
</tbody>
</table>

*14.5% 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. Tel: 0172-5095875. 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.
WELCOME

The Director and Staff of IPIRTI welcome Dr. Manoj Kumar Dubey who has taken over as Joint Director of IPIRTI from 11th January, 2016.

Dr. Manoj Kumar Dubey

IPIRTI Research Reports published

1. Study on the physical and mechanical properties of strands obtained by disintegration of bamboo strip for manufacturing of moulded product (RR No. 183)
2. Copperized karanj seed (Pongamia pinnata) oil extractive as a protective measure in plywood manufacture (RR No. 184)
3. Study and analysis of nano coating as fire retardant on wood panel products (RR No. 185)
4. Selection criteria and optimization of parameters of wooden frames used in fire rated doors of different ratings (RR No. 186)
5. Development of medium density fiberboard (MDF) from plantation grown timber species casuarina- phase ii (RR No. 187)
6. Study on trend analysis of wood based panels in India (RR No. 188)