



Program of the 17th International Nondestructive Testing and Evaluation of Wood Symposium

Hotel Pannonia, Sopron, Hungary 2011 September 14-16

September 14

8:30-9:10	Welcome speech
9:10-11:30	Plenary presentations
9:10-9:45	Impact of Nondestructive Testing and Evaluation of Wood Products by Robert J. Ross
9:45-10:00	Hungarian Rhapsody No. 2 on piano by Levente Csóka
10:00-10:35	Coffee break
10:30-11:00	Nondestructive Testing of Wood and Carbon Footprint by C. L. Huang
11:00-11:30	NDT of Wood related to Innovative Timber Structures by Jean-Luc Sandoz
11:30-13:00	Lunch

	Location White Hall	Location Europe Hall	Location Gallery
13:00-15:00	1. Tree and log quality 1/4 Session moderator Nobue Sobue	3. Structural lumber grading 1/4 Session moderator Guillermo Iniguez	4. Engineered wood products 1/2 Session moderator Laszlo Kuzsella
13:00-13:20	In-forest assessment of timber strength by Audun Ovrum	Grading structural tropical lumber using stress wave, transverse vibration and ultrasonic method by Fabiane A. C. Pires, Cláudio H. S. Del Menezzi, Mário R. Souza	Long-term moisture content and deformation measurement of blocklaminated timber by Thomas Tannert, Mareike Vogel, Robert Widmann
13:20-13:40	Ultrasonic imaging of defects in standing trees - Development of an automatic device for plantations by Loic Brancheriau, Philippe Gallet, Philippe Lasaygues	Grading of sawn timber using the vibration technique - Locating imperfections based on flexural mode shapes by Min Hu, Marie Johansson, Anders Olsson, Charlotte Bengtsson	The Effect of Longitudinal Compression on the Structure and Mechanical Properties of Beech Wood Material by László Kuzsella, Zsuzsanna Kocsik
13:40-14:00	Measurement of cross-sectional moisture distribution of logs and branches by impedance method using a middle electrode by Kohsei Murase, Nobuo Sobue	Structural Grading of Lumber Using Grain Angle in a Production Environment by Harry E. Moore, Ryan D. Baldwin	Combining Image Correlation from Optical Methods and Acoustic Analysis for Investigating Damage Evolution in Plywood by Franziska Ritschel, Peter Niernz, Andreas J. Brunner
14:00-14:20	A high speed CT scanner for the sawmill industry by Federico Giudiceandrea, Enrico Ursella, Enrico Vicario	Grading of thermally modified beech timber by Robert Widmann	Monitoring drying and thermal modification of wood by means of acoustic emission technology by Jelle van der Beek, Markku Tiitta
14:20-14:40	Acoustic Imaging of Sandalwood (Santalum album) Logs by Roger Turpening, Carol Asiala, John Diebel, Chris Done, Andrew Brown	Contribution of Slope of Grain Information in Lumber Strength Grading by Arnaud Jehl, Laurent Bleron, Fabrice Meriaudeau, Robert Collet	
14:40-15:00	Large Scale Wood Poles NDT Evaluation: the German Example by Sandoz, Jean-Luc, Benoit, Yann	Prediction of tensile and compressive modulus from various MOE of structural lumber by Kwang-Mo Kim, Kug-Bo Shim, Conroy Lum	
15:00-15:20		Coffee break	
15:20-17:20	1. Tree and log quality 2/4 Session moderator Peter Carter	3. Structural lumber grading 2/4 Session moderator Francisco Arriaga	4. Engineered wood products 2/2 Session moderator Lina Karlinasari
15:20-15:40	Behavior of Ultrasonic Wave Propagation in Presence of Holes on Pequiá (Aspidosperma desmanthum) Wood by Raquel Gonçalves, Chiara Secco, Domingos Cerri, Fernando Batista	Strength Grading of Structural Lumber - Effect of Damping and Knots by F. Divos, F. Sismandy-Kiss	Nondestructive Evaluation of End Joints in Meranti Wood Using Ultrasonic Wave Techniques by Lina Karlinasari, Effendi Tri Bahtiar
15:40-16:00	Velocity of Ultrasonic Waves in Live Trees and in Freshly-felled Logs of Exotic Trees Grown in Brasil by Cinthya Bertoldo Pedroso, Raquel Gonçalves, Fernando Batista, Chiara Barros Secco	Evaluation of the influence of visual parameters on wave transmission velocity in sawn chestnut timber by Abel Vega, Manuel Guaita, Juan Majada, Isabel Fernández, Vanessa Bano	Inspection of glue lines in glued laminated timber by means of ultrasound methods: experiments and modeling by Gerhard Dill-Langer, Cyrill Stritzke, Simon Aicher
16:00-16:20	Acoustic segregation of Pinus pinaster logs for structural lumber production according to strength classes by Oscar Santaclara, Esther Merlo	A Study of the influence of different types of timber footbridges on the vibrational natural frequency by Vanessa Bano, J. Carlos Santos, Julio Vivas, Soledad Rodriguez, Abel Vega, Keith Crews	Sub-surface Thermal Imaging of Bamboo and Bamboo-Glue Interface by Suneet Tuli, Smita Chugh, Krishnendu Chatterjee, Sanjeev Singh, Sudhakar P
16:20-16:40	Mechanical Properties Measurement of Non-defect logs by Using stress Wave by Xuechun Yang, Luo Juying	Combining NDT and visual strength grading to assess ancient timber beams stiffness to evaluate strengthening interventions suitability by Alberto Cavalli, Marco Togni	Theoretical and experimental investigations of damage process of glulam beams by Antal Kánnár, J. Szalai
16:40-17:00	Real-time measures of wood quality - transition from research to application by Peter Carter; Chief Executive	Improved structural grading system using non-destructive techniques on large Spanish Pinus sylvestris L. sawn timber	
17:00-17:20	Detecting red heart in beech (Fagus silvatica) by electric measurement by Balázs Göncz	Influence of the moisture content on the wave propagation velocity in Scots pine structural timber by Esteban, M, Montero, M.J, De la Mata, J, Íñiguez-González, G, Arriaga-Martitegui, F	
		Free time	

September 15

8:50-10:10	<p>2. Urban tree evaluation 1/2</p> <p>Session moderator Jaroslav Kolarik</p>	<p>3. Structural lumber grading 3/4</p> <p>Session moderator Marian Babiak</p>	<p>7. Condition assessment of historical wood structures 1/3</p> <p>Session moderator Brian K. Brashaw</p>
8:50-9:10	<p>Integrated System for Assessing Trees by Jaroslav Kolarik, Andrea Szoradova</p>	<p>Influence of local strength determining defects on grading machine settings based on dynamic measurements by Andreas Rais, Peter Stapel, Jan-Willem G. van de Kuilen</p>	<p>Delamination in wood products and wood based composites - the state of the art - by Voichita Bucur</p>
9:10-9:30	<p>Relevance of resistance drilling method and computer-based mapping in street tree management interventions in Madrid (Spain) by Calderón Guerrero, C., Alonso Cabezas, E., Domínguez Núñez, Saiz de Omenaca González, J.A.</p>	<p>Wood density determination by microwave radar by Ferenc Divos, Peter Divos, Istvan Ther</p>	<p>An Integrated NDT Approach for Determining Residual Strength of Ancient Wood Structural Members by Houjiang Zhang, Xiping Wang, Lei Zhu, Yanliang Sun, Robert J. Ross, Brian K. Brashaw</p>
9:30-9:50	<p>Axial, radial and tangential acoustic velocity and electric resistivity in London plane trees with different types of damages by Lothar Göcke</p>	<p>Non-destructive tests for strength grading of Slovenian structural sawn timber by Tomaz Pazlar, Goran Turk, Jelena Srpcic, Mitja Plos</p>	<p>Overview of some non-destructive methods for in situ assessment of structural timber by Marko Teder, Kalle Pilt, Matis Miljan, Martti Lainurm, Ragnar Kruuda</p>
9:50-10:10	<p>Research on propagation velocity of stress wave and ultrasonic wave on indefectible cross section of standing tree by Shiquan Song, Lihai Wang, Huadong Xu, Xiangfei You</p>	<p>Quality parameters of side and core structural timber determined by nondestructive and by bending methods by Babiak, M., Rohanova, A., Lagaña, R., Čunderlík, I.</p>	<p>In-situ assessment method of wood based on shear stresses obtained from withdrawal resistances of screw-type probes by Nobuyoshi Yamaguchi</p>
10:10-10:30	Coffee break		
10:30-12:30	<p>2. Urban tree evaluation 2/2</p> <p>Session moderator R. Bruce Allison</p>	<p>3. Structural lumber grading 4/4</p> <p>Session moderator Chin-Lin Huang</p>	<p>7. Condition assessment of historical wood structures 2/3</p> <p>Session moderator William L. Galligan</p>
10:30-10:50	<p>Reconstruction of Three-dimensional Stress Wave Tomography for Detecting Inner Defects in Logs by Lihai Wang, Na Wang, Xiangfei You, Zaixing Yan, Xuechun Yang</p>	<p>Application of image analysis for detection of wood features from NDT imaging data by Bruno Simões, Mariapaola Riggio, Raffaele De Amicis</p>	<p>Design Property Assessment of Single Members in Existing Structures - NDE Challenge by Donald A DeVisser, William L Galligan</p>
10:50-11:10	<p>Ultrasonic Wave Propagation Characteristic of Standing Tree in Urban Area by Lina Karlinasari, Dodi Nandika</p>	<p>Prediction of MOE for Turkish Red Pine: Stress Wave versus Artificial Neural Networks by Ergün Güntekin, Yavuz Cengiz, Tuğba Yılmaz</p>	<p>Condition Assessment of Ancient Wooden Building for Determining Reuse of the Wooden Members by Sang-Joon Lee, Chul-Ki Kim, Kwang-Mo Kim, Ki-Bok Kim and Jun-Jae Lee</p>
11:10-11:30	<p>Advances in tomography for standing trees by Steffen Rust</p>	<p>Logs vs. Sawn Timber: Nondestructive Linking Stiffness-Strength Properties by no author</p>	<p>Visualization of Internal State of Wood with X-ray CT Reconstruction Technique through out Reduced Number of X-ray Radiography by Chul-Ki Kim, Sang Joon Lee, Kwang-Mo Kim, Jun-Jae Lee</p>
11:30-11:50	<p>Waveform feature analysis of acoustic emission provides information about dehydration stress in spruce sapwood by Sabine Rosner</p>	<p>Waves propagation as a tool to ranking structural quality of Eucalyptus globulus Labill. beams by Esther Merlo, Raquel Gonçalves, Oscar Santaclara, Manuel Touza, Guillermo Iniguez, Eva Hermoso, Miguel Esteban</p>	<p>Stress waves tomography for the analysis of structural timber: limits, applications, possible combinations with other analysis techniques by Mariapaola Riggio, Maurizio Piazza</p>
11:50-12:10	<p>Dynamic measurements on branches - link with stability by Agnes Kinga Buza, Ferenc Divos</p>	<p>Predict Pith Location Relative to Lumber Surface Using Reflected Tracheid Effect by Chin-Lin Huang</p>	<p>Historic Log Cabin Structural Condition Assessment and Rehabilitation – A Case Study by Brian K. Brashaw, Robert Vatalaro, Robert J. Ross, Xiping Wang, Steven Schmieding, Walt Okstad (retired)</p>
12:10-12:30	<p>Acoustic tomography and microdrill resistance density measurements compared to x-ray CT scan on white birch (Betula papyrifera) by R. Bruce Allison</p>		<p>Use of Laser Scanning Technology to Obtain As Built Records of Historic Covered Bridges by Brian K. Brashaw, Robert Vatalaro, Samuel Anderson, Robert J. Ross, Xiping Wang, Penny Anstey, William Krueger</p>
12:30-14:00	Lunch		

14:00-16:00

Poster section

Session moderator

Lihai Wang

An Investigation on the Some Mechanical Properties of Wood Plastic Composites Made From the Flour of Poplar and Waste HDPE by Dr. Ramin Vaysi, S. Hossinzadeh, M. Shams	Determination of tensile strain fields in Norway spruce side boards using two master-slave connected contact-free measurement systems based on digital image correlation by Jan Oscarsson, Anders Olsson, Bertil Enquist, Marie Johansson Erik Serrano	SEM Analysis of Consolidation Treatments with Acrylic Resin for Degraded Wooden Objects by Ana-Adriana Tuduce, Maria Cristina Timar, Mihaela Campean, Dumitru Lica
An Investigation on the Some Mechanical Properties of Nano-Composite Made from Waste Newsprint, Nano-clay and Polypropylene by Dr. Ramin Vaysi, M.A. Danesh	Possibilities of non destructive tree testing on the field of urban forestry	Use of C16 Timber in UK Timber Frame Constructions by Dr. Keerthi Ranasinghe, Eve Johnson
Investigation on the Brightness Stability of Acetylated and bleached Beech CMP Pulp following Thermal and Optical Aging by Dr. Ramin Vaysi	Electromagnetic and ultrasonic methods for wood by M. Tiitta, L. Tomppo, J. van der Beek, R. Lappalainen	Experimental analysis of glued-in rods by Dolores Otero Chans, Javier Estévez Cimadevila, Emilio Martín Gutiérrez, Jose A. Vázquez
Field Acoustic Monitoring of Standing Trees for Wood Quality Assessment by Shan Gao, Xiping Wang, Lihai Wang, R Bruce Allison	Difficult stresses in glue laminated wood by Vanya Csilla	Anchorage solutions with threaded rods glued in timber: A multidisciplinary approach by Emilio Martín Gutiérrez, Javier Estévez Cimadevila, Dolores Otero Chans, Jose A. Vázquez
Abrasion some of wood species based on density by Ali Bayatkashkoli	Abrasion some of wood products based on density by Ali Bayatkashkoli	Non-Invasive, Remote Monitoring of Air-Drying of Lumber and Timber by George Grozdits, Mark Gibson, Robert Németh, Levente Csóka
Wood surface monitoring by infrared spectroscopy by Laszlo Tolvaj, Marta Palkovics	Preliminary study on the bending elastic behaviour of Hungarian reed stems by Montaña Jiménez-Espada, Ignacio Bobadilla-Maldonado, Rafael González-Escobar	Preliminary research on the bending characteristics of Hungarian reed bundles by Montaña Jiménez-Espada, Ignacio Bobadilla-Maldonado, Rafael González-Escobar
Good-of-fit analysis on strength data of Chinese larch (<i>Larix gmelini</i>) lumber by Jinghui Jiang, Jianxiong Lu, Haiqing Ren, Xiu Zhao	Investigation on "Dutch Elm Disease" in some forest areas of Guilan province by S.Zolghadry, M.G.Daryaei, J.Torkaman	Adhesive bulbs to improve the strength of glued-in joints in timber by Javier Estévez Cimadevila, Dolores Otero Chans, Emilio Martín Gutiérrez, Jose A. Vázquez
Asurvey on histopathology of <i>Ulmus glabra</i> and <i>U.carpinifolia</i> inoculated by <i>Ophiostoma nova-ulmi</i> fungs by S.Zolghadry, M.G.Daryaei, J.Torkaman	Restoration Techniques Based in the Use of Glued Grafts for Repairing and Reinforcing Wooden Structural Elements by Mikel Landa	Wood and Wood-Based Materials as Sensors—A Review of the Piezoelectric Effect in Wood by Robert J. Ross, Xiping Wang, Julie Blankenburg, Janet I. Stockhausen
Potentials of Nigerian grown <i>Caesalpinia pulcherrima</i> for pulp and paper production: morphological and chemical characterization by Owofadeju F.K, E.G. Ogbo	Ho to inspect sealing beams below (historic) floor covering	Non-destructive methods to estimate physical aging of plywood by Ignacio Bobadilla, Maria Cristina Santirso, Daniel Herrero, Miguel Esteban, Guillermo Iñiguez-González
The health state and stability evaluation of woody plants in urban greenery in Slovakia by Marek Kobza, Dušan Juhás, Gabriela Juhásová, Emília Ondrušková, Katarína Adamčíková	Study of the Repeating Application of Sonic Tomography by Laura Cevenini, Alberto Minelli	The formation of the xylem cell during the differentiation process for <i>Populusxauramericana</i> cv. by Zhao Guangjie, Xi Enhua
Effect of restorative material on velocities and tomograms in acoustic tomography by Shanqing Liang, Feng Fu	SEM Analysis for Evidentiation of Microfissures which Occur in the Wood Cell Membrane of Spruce Wood After Freezing and Thawing by Szmotku Maria Bernadett; Campean Mihaela; Feher Sandor	

16:00-16:20

Coffee break

16:20-18:00	5. Wood-based composites and industrial applications (1/1) Session moderator Ignacio Bobadilla	8. Other NDT related areas 1/2 Session moderator Peter Niemz	6. Vibration based methods 1/2 Session moderator Xiping Wang
16:20-16:40	Infrared Thermography as a Nondestructive Technique for the Study of Wooden Structures by Rodríguez Liñán, C; Morales Conde, MJ; Rubio de Hita, P; Pérez Gálvez, F.	Thermal Conductivity Coefficient as a Predictor of Wood Strength by Türker Dündar, Şeref Kurt, Nusret As, Burhanettin Uysal	Elasticity Modulus in Peruvian Tropical Woods Using Non-Destructive Techniques –Preliminary Study by Patricia Inés Carnero Palacios, Luis Yoza Yoza, Moisés Acevedo Mallque, Julio Arakaki Kian
16:40-17:00	Evaluating non-destructive portable X-ray Fluorescence (XRF) method for preservative treated wood in service by Won-Mo Koo, Dong-Yeop Kang, Kwon-Min Kim, Gyeong-Nam Kim, Jong-Young Park, Kwang-Mo Kim, Sung-Mo Kang	Synchrotron based tomographic in-situ microscopy of wood under uniaxial compression in fiber direction by M.Zauner, D.Keunecke, M.Stampanoni, P.Niemz	Selected physical and mechanical properties of the Chilean wood species Tapa, Olivillo, Laurel, Lengua, Alerce and Manio by Erik Baradit, Peter Niemz
17:00-17:20	In situ acoustic methods to estimate physical and mechanical aging of oriented strand board by Ignacio Bobadilla, Marta Robles, Roberto Martínez, Guillermo Iñiguez-González, Francisco Arriaga	Application of Esclerometer Test Method in Specimens of Eucalyptus Saligna by Julio Soriano, Raquel Gonçalves, Cinthya Bertoldo Pedroso, Letícia Torres Bressan, Mônica Ruy	Monitored Assessment of Structural Integrity of Multilayered Glued Laminated Timber Beams with Air-Coupled Ultrasound and Contact Ultrasound Imaging by Sergio J. Sanabria, Roman Furrer, Juerg Neuenschwander, Peter Niemz, Urs Sennhauser
17:20-17:40	Relationship between Dynamic Cantilever-beam and Static Modulus of Elasticity of Wood Plastic Composite Panels by Seyyed Mohammad Nabavi, Ali Akbar Enayati, Mohammad Layeghi, Seyyede Masoumeh Hashemi Tabalvandani	Effect and Mechanism of Subzero Temperature on Propagation Velocity of Stress Wave in Korean Pine Wood by Huadong Xu, Lihai Wang	Fixed-free against free-free beams for dynamic young's modulus of wood by Mehran Roohnia, Pourya Shafiee, Negin Manouchehri, Ajang Tajdini
17:40-18:00	Derivation of Mechanical Properties by Pushing of a Pin into Wood by Michal Kloiber, Jan Tippner, Jaroslav Hrivnak, Jan Bryscejn	JANKA and Esclerometer Methods to Predict the Hardness of Specimen on Eucalyptus Saligna by Julio Soriano, Raquel Gonçalves, Alex Julio Trinca, Cinthya Bertoldo, Camila Almeida, Mônica Ruy	Hole influence and fft variation inspection in poplar Wood by free vibration method by A.Yavari, M.Roohnia, H.Khademi-Eslam, E.Yavari

Free time

19:30-21:30

Banquet

September 16

8:30-10:10	1. Tree and log quality 3/4 Session moderator Loïc Brancheriau	8. Other NDT related areas 2/2 Session moderator Raquel Gonçalves	7. Condition assessment of historical wood structures 3/3 Session moderator Robert J. Ross
8:30-8:50	An integrated approach for wood quality prediction from standing tree to sawn timber by Franka Brüchert, Lars Wilhelmsson, Shaun Mochan, Udo Hans Sauter	New Methods for NDT Testing of Wood (Ultrasonic Echo Technique, Radiografic Echo, Fast Neutrons) by A. Hasenstab, K. Frühwald, K. Osterloh, T. Bücherl	NDE investigation of the timber foundation in the historic Kennecott Mine Concentration Mill Building by James P. Wacker, Xiping Wang, Douglas R. Rammer, Bessie M. Woodward
8:50-9:10	Nondestructive Evaluation of Planted Poplar Standing Trees Using Stress Wave Technique by Saeed Kazemi-Najafi, Ghanbar Ebrahimi, Seyed Ehsan Sadati	Application of NIR spectroscopy to wood products by Satoru Tsuchikawa, Takaaki Fujimoto	Use of Nondestructive Testing and Computer Aided Design (CAD) for the evaluation of wood condition in a replica of the Spanish ship "Nao Victoria" by Calderón Guerrero, C.; Saiz de Omeñaca González, J.A.
9:10-9:30	Factors and models for the grade distributions of sawn timber for Scots pine and Norway spruce in Finland and north-western Russia: visual strength and appearance quality by Hautamäki Sanna, Kilpeläinen Harri, Kannisto Kari, Wall Tapio, Verkasalo Erkki	Optical systems application to determine deformations – orientation method application to determine shear modulus by Zsolt Karácsonyi, József Garab	Damage detection of wood beams using the differences of the local modal flexibility by Hu Chuanshuang, Wen Wei, Zhou Haibin, Yun Hong
9:30-9:50	The role of Near Infrared Spectroscopy in evaluating standing tree eucalypt wood quality: comparing field portable and laboratory approaches by Geoffrey M. Downes, Roger A. Meder, Robert Evans, Christopher E. Harwood	Effect of annual ring structure of wood on 100 GHz millimeter wave beam by Soichi Tanaka, Yuko Fujiwara, Yoshihisa Fujii, Shogo Okumura, Hiroyoshi Togo, Shoji Mochizuki, Naoya Kukutsu	Condition Assessment of a 2500 Year Old Mummy Coffin by Turker Dundar, Robert J. Ross
9:50-10:10	Evaluation of mechanical properties of green wood of Italian stone pine (Pinus pinea L.) by Pirchio M., Cinelli F., G. Gallone	Ultrasonic NDT of Wood using IDSAM by G.H.Agrawal, Dr.N.K.Choudhari	Non destructive evaluation of strength of decayed wood members in two historic constructions located in Gomishan (North of Iran) by Mehrab Madhoushi
10:10-10:30			

Coffee break

10:30-12:10	1. Tree and log quality 4/4 Session moderator Hugo E. Fassola	6. Vibration based methods 2/2 Session moderator Luis Yoza Yoza and Mehran Roohnia
10:30-10:50	Effect of pruning of Pinus taeda on longitudinal ultrasound speed of standing trees and logs in plantations of North Eastern Argentina by Hugo E. Fassola ¹ ; Daniel Videla ² ; Rosa Angela Winck ³ ; Raul Pezzutti ⁴	Modeling Temperature and Moisture State Effects on Acoustic Velocity in Wood by Shan Gao, Xiping Wang, Lihai Wang, R Bruce Allison
10:50-11:10	Acoustic velocities and NIR spectroscopy as predictors of board stiffness in exotic Caribbean pine by Anton Zbonak, Martin Davies, Kevin Harding, Terry Copley	Study of Elastic Bending Behaviour and Evaluation of the Influence of Moisture Content on the Elastic Bending Behaviour of Hungarian Reed Stems by Montana Jiménez-Espada, Rafael González-Escobar
11:10-11:30	Modeling structural lumber quality for Pinus pinaster Ait. in northwestern Spain using standing tree acoustic assesment, stand variables and tree characteristics by Oscar Santaclara, Juan G. Alvarez, Esther Merlo	Measurement Technique Development in Ultrasound Applied to Tropical Woods by Luis Yoza Yoza, Moises Acevedo Mallque
11:30-11:50	Application of NDT Stress Wave Method for Assessing Dynamic Modulus in Sound Standing Trees of Populus deltoides by Mehrab Madhoushi	Assessment of wood using air-coupled US transducer by R. Grimberg, A. Savin, I. Curtu, M. D. Stanciu, D. Lica, C. Cosereanu
11:50-12:10	Fundamentals of Acoustic Measurements in Trees and Logs and Their Implication to Field Application by Xiping Wang	Elastic Constants of Wood Determined by Ultrasound Wave Propagation by Raquel Gonçalves, Alex Julio Trinca, Domingos Guilherme Cerri
12:10-12:30	An investigation into acoustic behavior of reaction woods by flexural vibration method (case study: poplar & spruce) by M. A. Saadat-Nia, A. A. Enayati, L. Brancheriau, K. Pourtahmasi	Dynamic Shear and Torsional Modulus of Pine Beams by Seyyed Masoumeh Hashemi Tabalvandani, Mehran Roohnia, Seyyed Mohammad Nabavi
12:30-13:50	Lunch	
13:50-14:30	Closing Free program	