

Ali Shalbafan (Associate Professor)

Ph.D in Wood and Paper Sciences and Technology

I- Personal Identity

Birth of Date: July 1981
Place of Birth: Qom, Iran
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II- Education records:

B. Sc.: Wood & Paper Science & Technology, Faculty of Natural Resources, Zabol University, Zabol, Iran (2001 -2004).

M. Sc.: Wood & Paper Science & Technology, Faculty of Natural Resources, Tarbiat Modares University, Tehran, Iran (2004 - 2006).

Ph.D: Innovative lightweight wood-based panels, Department of Wood Science, Mechanical Wood Technology Institute, Hamburg University, Germany (2009 - 2013).

III- Seminar and Thesis Publications:

- **Shalbafan, A.**, 2004 Microscopic anatomy of wood stem and branch in *Gleditschia Caspica*, B.Sc. Project, Natural Resources Faculty, Zabol University.
- **Shalbafan, A.** 2005 A Study on density profile of three types of medium density fiberboard (MDF) used in Iran market. M. Sc. Seminar, Tarbiat Modares University, Tehran, Iran.
- **Shalbafan, A.** 2006, Non-destructive evaluation of standing beech trees in north of Iran using ultrasonic technique. M. Sc. Thesis, Tarbiat Modares University, Tehran, Iran.
- **Shalbafan, A.** 2013, Investigation of foam materials to be used in lightweight wood-based composites. Ph.D Thesis, Hamburg University, Germany.

IV- Research Interest


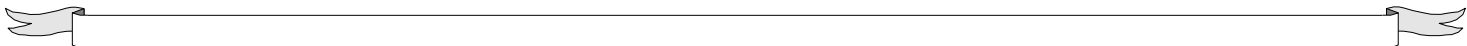
- Wood-based panels; production process technology and optimization.
- Development of hybrid and lightweight wood-based panels.
- Development of green and natural adhesives for wood composites.
- Recycling of materials to develop value-added wood products.

V- Patent registration

- **Ali Shalbafan** and Hedi Hassannejad, Mehdi Rahmaninia (2020). Wood-based panels using chitosan and modified chitosan as formaldehyde scavengers. **USPTO**: United States Patent and Trademark Office, (Granted).
- **Ali Shalbafan** and Johannes Welling (2017). Wood-based panels, method for manufacturing them and their use. EP2875924 B1, **EPO**: European Patent Office (Granted).
- **Ali Shalbafan** and Hedi Hassannejad, Mehdi Rahmaninia (2017). Reduction of Formaldehyde Emission from Wood-based Panels using Eco-friendly Scavenger. Industrial Property General Office, Iranian Patent Organization (Granted).
- **Ali Shalbafan** and Kamran Choupani Chaidareh (2016). Continuous production of innovative sandwich panels using injected thermosetting foam as core layer and its products thereof. Industrial Property General Office, Iranian Patent Organization (Granted).
- **Ali Shalbafan** (2015). Lightweight wooden-based panels using foamable beads and manufacturing process thereof. Industrial Property General Office, Iranian Patent Organization (Granted).

VI- Research Papers

- Kazemi Najafi, S., **Shalbafan, A.**, and Chaharmahali, M. 2006. A study on profile of three types of medium density fiberboard (MDF) used in Iran market, *Iranian Journal of Wood and Paper Science Research*, 20(2): 285-300.
- Noori, H., Ghasemian, A., **Shalbafan, A.** and Haji Hassani, R. 2008. Determination of optimum refining of paper made of recovered Kraft liner paper, *Iranian Journal of Wood and paper Science Research*, 23(1): 12-19.
- Kazemi Najafi, S., **Shalbafan, A.**, and Ebrahimi, Gh. 2009. Internal decay assessment in standing beech trees using ultrasonic velocity measurement, *European Journal of Forest Research*, 128: 245-350.
- **Shalbafan, A.**, Luedtke, J., Welling, J., and Thoemen, H. 2012a. Comparison of foam core materials in lightweight wood-based panels made by continuous process, *European Journal of Wood and Wood Products*, 70(1): 287-292.
- **Shalbafan, A.**, Welling, J. and Luedtke, J. 2012b. Effect of processing parameters on mechanical properties of lightweight foam core sandwich panels. *Wood Material Science & Engineering*, 7(2):69-75.
- **Shalbafan, A.**, Welling, J. and Luedtke, J. 2013a. Effect of processing parameters on physical and structural properties of lightweight foam core sandwich panels. *Wood Material Science & Engineering*, 8(1):1-12.
- **Shalbafan, A.**, Luedtke, J., Welling, J. and Fruehwald, A. 2013b. Physiomechanical properties of ultra-lightweigh foam core particleboards: Different core densities. *Holzforshung*, 67(2):169-175.

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- **Shalbafan, A.**, Dietenberger, M. A. and Welling, J. 2013c. Fire performance of foam core particleboard produced in an one-step process. *European Journal of Wood and Wood Products*, 71(1):49-59.
 - Welling, J. and **Shalbafan, A.** 2013d. Physikalische und mechanische Eigenschaften von leichten HWS-Platten mit in-situ geschäumtem Kern. *Holztechnologie*, 54(2):36-42.
 - Dietenberger, M. A., **Shalbafan, A.**, Welling, J. and Boardman, Ch. 2013f. Treated and untreated foam core particleboards with intumescent veneer: comparative analysis of cone calorimeter. *Journal of Thermal analysis and Calorimetry*, 114(3):979-987.
 - **Shalbafan, A.**, Behntien, J. T., Welling, J. and Barbu, M. C. 2013e. Flat pressed wood plastic composites made of milled lightweight foam core particleboard residues. *European Journal of Wood and Wood Products*, 71(6):805-813.
 - Sarmin, S. N., Welling, J., Krause, A., and **Shalbafan, A.** 2014. Investigating the possibility of geopolymer to produce inorganic-bonded wood composites for multifunctional construction material - A review. *BioResources*, 9(4):7941-7950.
 - **Shalbafan, A.**, Tachmann, O., Welling, J. 2016. Using of expandable fillers to produce low density particleboard. *European Journal of Wood and Wood Products*, 74(1):15-22.
 - **Shalbafan, A.**, Benthien, J. T. and Lerche, H. 2016. Biological characterization of panels manufactured from recycled particleboards using different adhesives. *BioResources*, 11(2):4935-4946.
 - **Shalbafan, A.**, Welling, J., Hasch, J. 2016. Geopolymers as potential new binder class for the wood based composite industry. *Holzforschung*, 70(8):755-761.
 - **Shalbafan, A.**, Chaydarreh, K. C., Welling, J. 2016. Development of a one-step process for production of foam core particleboards using rigid polyurethane foam. *BioResources*, 11(4):9480-9495.
 - **Shalbafan, A.**, Rheme, M., Thoemen, H. 2017. Ultra-light particleboard; characterization of foam core layer by digital image correlation, *European Journal of Wood and Wood Products*, 75(1):43-53.
 - Chaydarreh, K. C., **Shalbafan, A.**, Welling, J. 2017. Effect of ingredient ratios of rigid polyurethane foam on foam core panels' properties. *Journal of Applied Polymer Science*, 134(17):44722-1 – 44722-8.
 - **Shalbafan, A.**, Welling, J. 2017. Thermal and acoustic characteristics of innovative foam core particleboards. *Wood and Fiber Science*, 49(1):73-83.
 - **Shalbafan, A.**, Welling, J., Hasch, J. 2017. Effect of aluminosilicate powders on the applicability of innovative geopolymer binders for wood-based composites. *European Journal of Wood and Wood Products*, 75(6):893-902.
 - Dietenberger, M. A., **Shalbafan, A.**, Welling, J. 2017. Cone calorimeter testing of foam core sandwich panels treated with intumescent paper underneath the veneer. *Fire and Materials*, 42(3): 296-305.
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- Jafarnezhad, S., **Shalbafan, A.**, Luedtke, J. 2018. Effect of expandable and expanded granules diameter on the properties of hybrid-lightweight panels (In Persian). *Journal of Forest and Wood Products*, 70(4): 719-728.
- Jafarnezhad, S., **Shalbafan, A.**, Luedtke, J. 2018. Effect of expanded polystyrene granules on the physical and mechanical properties of hybrid lightweight panels (In Persian). *Iranian Journal of Wood and Paper Industries*, 9(3): 383-396.
- **Shalbafan, A.**, Jafarnezhad, S., Luedtke, J. 2018. Evaluation of low-density hybrid panels using expandable granules: effect of granules diameter and content. *European Journal of Wood and Wood Products*, 76(5):1505-1514.
- Jafarnezhad, S., **Shalbafan, A.**, Luedtke, J. 2018. Effect of surface layers compressibility and face-to-core-layer ratio on the properties of lightweight hybrid panels. *International Wood Products Journal*, 9(4): 164-170.
- Barbu, M.C., **Shalbafan, A.**, 2018. Universitäre Ausbildung für Holzwissenschaft in Europa und weltweit. Teil 26: Iran. *Holztechnologie*, 59(6): 53-58.
- Bahrami, M., **Shalbafan, A.**, Welling, J. 2019. Development of plywood using geopolymer as binder; effect of silica fume on the plywood and binder characteristics. *European Journal of Wood and Wood Products*, 77:981-994.
- **Shalbafan, A.**, Thoemen, H. 2020. Geopolymer-bonded laminated veneer lumber as environmentally-friendly and formaldehyde-free product: effect of various additives on geopolymer binder features. *Applied Sciences*, 10(2): 593.
- Khojasteh-Khosro, S., **Shalbafan, A.**, Thoemen, J. 2020. Furniture manufacturers attitudes about lightweight wood-based panels for furniture application. *European Journal of Wood and Wood Products*, 78(3): 593-603.
- Khojasteh-Khosro, S., **Shalbafan, A.**, Thoemen, J. 2020. Evaluation of adhesion strength of coatings and face layers properties of foam core lightweight panels (In Persian). *Journal of Color Science and Technology*, 14(1): 1-13. JCST-1901-1034.
- Khakzad, J., **Shalbafan, A.**, Kazemi-Najafi, S. 2020. Lightweight tubular fiberboard: Effect of hole diameters and number on panel properties. *Maderas. Ciencia Y Tecnología*, 22(3): 311-324.
- Jafarnezhad, S., **Shalbafan, A.**, Luedtke, J. 2020. Effect of the polystyrene granules type and content on the physical and mechanical properties of the lightweight wood-based panels. *Journal of Wood and Forest Science and Technology*, 27(1): 111-125 (In Persian).
- Hassannejad, H., **Shalbafan, A.**, Rahmaninia, M. 2020. Reduction of formaldehyde emission from medium density fiberboard by chitosan as scavenger. *The Journal of Adhesion*, 96(9): 797-813.
- **Shalbafan, A.**, Hassannejad, H., Rahmaninia, M. 2020. Formaldehyde adsorption capacity of chitosan derivatives as bio-adsorbents for the wood-based panels. *International Journal of Adhesive and Adhesion*, 102: 102669 (1-8).
- **Shalbafan, A.**, Nadali, A., Thoemen, H. 2020. A multifunctional mineral binder for plywood production: the effect of manufacturing parameters on bonding quality. *Materials*, 13(10): 2360.

- Khojasteh-Khosro, S., **Shalbafan, A.**, Thoemen, H. 2020. Consumer behavior assessment regarding lightweight furniture as an environmentally-friendly product. *Wood Materials Science and Engineering*, In Press, DOI: 10.1080/17480272.2020.1847187.
- Eghtedarnejad, N., Kazemi-Najafi, S., **Shalbafan, A.** 2020. The effect of chipping method on the geometry of particles produced from Date Palm frond. *Bioresources*, 16(1): 1131-1143.
- **Shalbafan, A.**, Chaydarreh, K. C., Welling, J. 2021. Effect of blowing agent concentration in rigid polyurethane foam on the properties of foam core particleboard. *Wood Materials Science and Engineering*, 16(2): 85-93.
- Allahverdipoorazar, F., **Shalbafan, A.**, Berthold, D. 2021. Geopolymer as a multifunctional mineral binder to produce laminated veneer lumber: effect of various aluminosilicate powder types on panels and geopolymer binder features. *European Journal of Wood and Wood Products*, 79(2): 349-362.

VII- List of Papers Presented in Congresses

- Kazemi Najafi, S., Ebrahimi Gh. and **Shalbafan, A.** Nondestructive evaluation of beech trees using ultrasonic technique. Proceeding of the 15th International Symposium on Nondestructive Testing of Wood, September 2007, Minesota, USA.
- **Shalbafan, A.**, Luedtke, J., Welling, J., and Thoemen, H. Multi-layered lightweight panels made by in-process foaming: comparison of core materials. Proceeding of 53rd International Convention of Society of Wood Science and Technology, October 2010, Geneva, Switzerland.
- **Shalbafan, A.**, Luedtke, J., Welling, J. Sandwich panels produced in a one-step process following different pressing schemes: mechanical and physical properties. 1st Think Light – International Conference on Lightweight Panels, LIGNA Hannover, 31 May to 1 June 2011, Hannover, Germany.
- **Shalbafan, A.**, Welling, J. and Luedtke, J. Effect of pressing schedules on mechanical properties of multi-layered lightweight panels. 65th International Convention of Forest Products Society, June 2011, Portland, Oregon, USA.
- **Shalbafan, A.**, Welling, J., Benthien, J. and Luedtke, J. Innovative lightweight wood plastic composites produced in a one-step process. 5th International Wood Fibre Polymer Composites Symposium, September 2011 Biarritz, France.
- Welling, J., **Shalbafan, A.**, Luedtke, J. and Barbu, M. C. Effect of core densities on mechanical properties of lightweight foam core sandwich panels. The 8th International Conference on Wood Science and Engineering in the Third Millennium. November 2011, Brasov, Romania.
- Welling, J. and **Shalbafan, A.** Physikalische und Mechanische Eigenschaften von Leichten HWS-Platten mit in-situ Geschäumtem Kern. 15th Holztechnologische Kolloquium. March 2012, Dresden.
- **Shalbafan, A.**, Welling, J. Innovative lightweight wood-based panels. 4th Joensuu Forestry Networking Week, May 2012, Joensuu, Finland.
- Dietenberger, M.A., **Shalbafan, A.** Welling, J. Cone calorimetry analysis of FRT intumescent and untreated foam core particleboards. NATAS: 40th Annual

Conference of North American Thermal Analysis Society, August 2012, Orland, Florida, USA.

- **Shalbafan, A.**, Welling, J. Innovative foam core particleboard produced in an integrated process. 8th Forest-Based Sector Technology Platform (FTP) Conference, March 2013, Barcelona, Spain.
- Dietenberger, M.A., **Shalbafan, A.** Welling, J. Foam core particleboards with intumescent FRT veneer: cone calorimeter testing with varying adhesives, surface layer thickness, and processing conditions. BCC: 25th Annual Conference of Recent advances in Flame Retardancy of Polymeric Materials, May 2014, Stamford, CT, USA.
- **Shalbafan, A.** Lightweight wood-based panels as a solution for forest conservation. 2nd conference in New Technology in wood and Paper Industries, 22-23 October 2014, Chalos, Mazandaran, Iran.
- Rhême, M., **Shalbafan, A.** and Thoemen, H. Mechanical properties of bio-based foam in ultralight particleboards. COST Action FP1303 Technical Workshop, 24-25 February 2016, Madrid, Spain.
- Chaydareh, K. C., **Shalbafan, A.** Evaluation of structural properties of sandwich panels manufactured of polyurethane foam injection. Agricultural development & Healthy Earth, 20 January, 2016, Tehran, Iran.
- **Shalbafan, A.**, Chaydarreh, K. C., Welling, J. Developing one-step process for manufacturing of foam core particleboards using polyurethane. 10th European Wood-based Panels Symposium, 5-7 October 2016, Hamburg, Germany.
- **Shalbafan, A.**, Welling, J., Hasch, J. Geopolymers as formaldehyde free binders for the wood-based composite industry. 10th European Wood-based Panels Symposium, 5-7 October 2016, Hamburg, Germany.
- **Shalbafan, A.**, Choupani, K. C., Welling, J. Effect of blowing agent on physical and mechanical properties of foam core particleboards. International Panel Products Symposium, 4-5 October 2017, Liandudno, Wales, UK.
- **Shalbafan, A.**, Jafarnezhad, S., Luedtke, J. Development of lightweight hybrid wood-based panels using in-situ polystyrene granules. International Panel Products Symposium, 4-5 October 2017, Liandudno, Wales, UK.
- Nadali, A., **Shalbafan, A.**, Thoemen, H. Evaluation of plywood shear strength produced by geopolymer binder. 2nd National Conference on Knowledge and Innovation in the Wood and Paper Industry, 27-28 February 2019, Tehran University, Karaj, Iran.
- Khojasteh-Khosro, A., **Shalbafan, A.**, Thoemen, H. Evaluation of mechanical properties of lightweight foam-core MDF using expandable polystyrene granules. 2nd National Conference on Knowledge and Innovation in the Wood and Paper Industry, 27-28 February 2019, Tehran University, Karaj, Iran.
- Khojasteh-Khosro, S., **Shalbafan, A.**, Thoemen, H. Improving bio-based poly(lactic acid) properties using polycarbonate. 14th International Seminar on Polymer Science and Technology (ISPST), 11-12 November 2020, Tarbiat Modares University, Tehran, Iran.

VIII- Reviewer in Journals

European Journal of Wood and Wood Products, Wood and Fibre Science, BioResources, International Journal of Wood and Wood Products, Wood Materials Science and Engineering, Journal of Applied Polymer Science, Polymers (Basal), Journal of Thermal Analysis and Calorimetry, Polimeros, Journal of Forest and Wood Products, Iranian Journal of Wood and Paper Industries, Iranian Journal of Wood and Paper Science Research.

IX- Courses Taught

- Passing the instructional courses in teaching methodology (124 hours).
- Educational visit to a large number of faculties, labs and factories involved in Wood and Paper Science & Technology all over the world (Iran, Europe, North America).
- Excellent proficiency in wood industry machinery in carpentry and furniture factories and passing the course entitled **“Instruction in Operating Woodworking Machines”** at Hamburg University.
- Participation in the two weeks training course (International Wood Academy) on **“Wood-based panels: Process, Properties and Uses”** in Biel, Switzerland (5th – 16th September 2011).
- Participation in a workshop entitled: **“Innovative Valorisation Management Master Class”** at the Antwerp Management School, Antwerp, Belgium (February 2012).
- Participation in the one-week workshop entitled: **“Joensuu Forestry Networking Week: Green Growth Based on Forests New Wooden Products and Construction”**, Joensuu, Finland (May 2012).
- Participation in a Summer School entitled: **“Environmental Scanning Electron Microscopy and Microanalysis”** at ESB, Ecole Supérieure du Bois, Nantes, France (June 2012).
- Participation in the one-week training course (International Wood Academy) on Module 1 - **“Wood-based panels: Process Technology”** in Biel, Switzerland (7th – 12th September, 2015).

X- Records and Scores

- The top student of Wood and Paper Science & Technology ever since the foundation of the Tarbiat Modares University, Iran (M.Sc. course).
- Awarding the best poster presentation at the Joensuu Forestry Networking Week 2012-Finland (20-25th May, 2012).
- Tuition Award from the “European Research Infrastructure” project for one-week academic research in the FCBA Physics Laboratory, Bordeaux, France, March 2013.
- Tuition Award to attend the “Forest-based Sector Technology Platform (FTP-c8)” – The European Forestry House, Barcelona, March 2013.
- Awarding the scholarship for scientific mission (3 months) at Bern University of Applied Sciences, Switzerland (July – September 2015).
- Awarding the scholarship for scientific mission (3 months) at Thuenen Institute for Wood Research in Hamburg, Germany. German Academic Exchange Services (DAAD), July – September 2017.
- Awarding the research grant memorial of Dr. Kazemi-Ashtiani from the Iranian National Talents Foundation, 2016 - 2017.
- Awarding the scholarship for scientific mission (3 months) at Bern University of Applied Sciences, Switzerland (July – September 2019).