LIFE FORMS
NEW RESEARCH PROPOSALS

P-01-SIN: *Understanding mechanism of commercially available resin interaction between inter-wood species through a systematic Literature Review and Meta-Analysis*

PI: Arijit Sinha & Islam Hafez **|** Site: OSU

LEVEL OF INTEREST

Answer	Count	%
Very Interested	3	30%
Interested	5	50%
Interested with Change	0	0%
Not Interested	2	20%
Abstain	0	0%
Total	**10**	**100%**

QUESTIONS

- How will research findings be presented from a high-level view? Is it possible to include discussion on how AI may help with this kind of initiative?

SUGGESTIONS

- As part of work, include methods and tips related to how to conduct this kind of R&D search including search tools to use. Present R&D topics as time-based trends over time as part of work. Consider using heat maps, word cloud charts and hierarchical relationships if appropriate.

- Tie this in with the USDA project evaluating alternate species.

- It will be valuable for a continuation of this research to involve the manufacturing companies into hosting the researcher and assessing internal metadata.

- We have to find a way to get member companies and other industry members to contribute data.

- Keep an open mind about adding additional species of interest if feasible as you get into the project.

- We suggest evaluating fast growing species in the project.

COMMENTS

- This research is important when evaluating new species.   The tendency is to focus on the mechanical properties of the veneer that may go into LVL. While this is important, it is not worth going through the evaluation process if it doesn't stick, is difficult to peel or dry, and what kind of recovery one can expect from the log.

- A worthwhile project.

- This is an interesting approach. From the standpoint of engineered wood there are limitations (e.g. difference in mechanical properties or SG) besides bonding that may make it impractical to mix species. One may be able to substitute a mid-grade ply of Douglas-fir for a high-grade ply of lodgepole pine, for example, but there is the practical aspect of additional SKUs on the ground and regional availability.

- Seems difficult to get access to detailed resin formulations needed to make a comparison between studies.

- Lots of foreseeable challenges... but fascinating idea for industry. This would provide a roadmap for using this type of datamining with wood.

- Well thought out project with an innovative approach.

P-02-MU: Modeling of Edge Bending for Mass Timber Products

PI: Lech Muszynski, John Nairn & Fatemeh Rezasei | Site: OSU

LEVEL OF INTEREST

Answer	Count	%
Very Interested	1	10.00%
Interested	4	40.00%
Interested with Change	1	10.00%
Not Interested	2	20.00%
Abstain	2	20.00%
Total	10	100%

QUESTIONS

- Will a panel be made of LVL for testing? To what extend will LVL be included in testing?

SUGGESTIONS

- My organization has is very interested in this project, but we have suggestions. The scope is ambitious; therefore, we suggest limiting the scope to veneer based products. The next study can focus on lumber based or other SCL products. Also, getting the model into a product standard will be difficult. There is value for a design methodology for a designer.

- Experience in volume effect testing would say that this is a complicated topic. Despite the weak-link theory, experience in testing shows end joint type, end joint adhesive, and product grade will influence the results. We suggest focusing on one MTP product type (perhaps veneer based since there are no CLT manufacturers in the room) to prove out that the modelling approach is feasible. Once you have a methodology established then future work could focus on incorporating additional products

COMMENTS

- Understand the importance overall to certain industries, but simply not in alignment with corporate interests.

- There is a potential for my organization to donate material. Qualification testing of CLT involves justification of a model. Often the test material outperforms the model, especially with lumber. The difference between prediction and testing is due to material selection.   The manufacturer is not able to take advantage of the higher number unless they are willing to test more in qualification. Because LVL producers are producing a product closer to grade, the model will better predict performance.

- A beneficial project for the international timber industry

- Not relevant for our group, but no doubt in its relevancy for the industry and no doubt in you team's ability to answer these questions.

- Seems worthwhile to industry but outside of our company's market.

P-03-PR: Identifying maximum tolerance and mechanisms of interaction for two common resins systems and two fire retardant treatments

PI: Gerald Presley | Site: OSU

LEVEL OF INTEREST

Answer	Count	%
Very Interested	2	20.00%
Interested	7	70.00%
Interested with Change	1	10.00%
Not Interested	0	0.00%
Abstain	0	0.00%
Total	10	100%

QUESTIONS

- For OSB, adding FR to blender may be a good choice, but for veneered or larger assemblies such as CLT, would individual plys be sprayed prior to bonding or would assembly be sprayed post-construction?

- What levels of treatment are even relevant for their intended performance benefits? What considerations will be made for reaction rate vs. migration of the treatments?

SUGGESTIONS

- Please include SEM, and other forms of microscopy to determine the location of the treatments within the cell wall. There should be an assessment of lumber and veneer.

- Focus on DMA first. This is a more direct approach to adhesive/treatment interactions in the presence of wood.

- Use boric acid and APP instead of a proprietary FR formulation.

- We suggest including PF resins in the project.

COMMENTS

- Relevant to broad group of WBC members.

- Beneficial project for the industry.

- Good re-submission.

- Details on type of FR still seem vague and should be fleshed out more, but overall worthwhile.

- Resins are formulated for a specific FR system.

- This looks like a better approach to investigating this issue.

P-04-HA: Evaluation of tannins extracted from waste bark as fire retardant for wood composites

PI: Islam Hafez, Chip Frazier & Lech Muszynski | Site: OSU & VT

LEVEL OF INTEREST

Answer	Count	%
Very Interested	2	20.00%
Interested	5	50.00%
Interested with Change	2	20.00%
Not Interested	1	10.00%
Abstain	0	0.00%
Total	10	100%

QUESTIONS

- Curious about several aspects of project such as how much tannin can be removed from quantity of bark, does source bark (species) result in variation in FR efficacy, what about batch-to-batch tannin FR efficacy from same species?

- Good topic to pursue and overall, very worthwhile. Spray-on fire retardants have major limitations (e.g. limited depth of penetration, loss of surface based fire retardant with weathering, exposure, damage etc., limitations with building standards etc.) compared to vacuum-pressure impregnated fire retardants depending on what type of wood composite is being considered. Is there an option to investigate whether tannin-based fire retardants could be applied by vpi systems?

- Can you figure out if tannins accomplish your fire-retardant goal before going through the bark extraction?

- What is the tannin yield of bark?

SUGGESTIONS

- There should be an analysis of tannins alone into the materials.

- Should be applied as a coating and not in the blender. test FR properties of the tannin by itself before proceeding to testing on wood composites.

- It would be good to look into not just flame spread but also cone calorimetry or other method that asses the combustion resistance.

COMMENTS

- Very interesting topic.

- The project scope should be limited. Either evaluate a glue line treatment or a finished product treatment.

- Potentially include lignin in the study as well? And/or look at current tannin-based adhesives for fire retardancy.