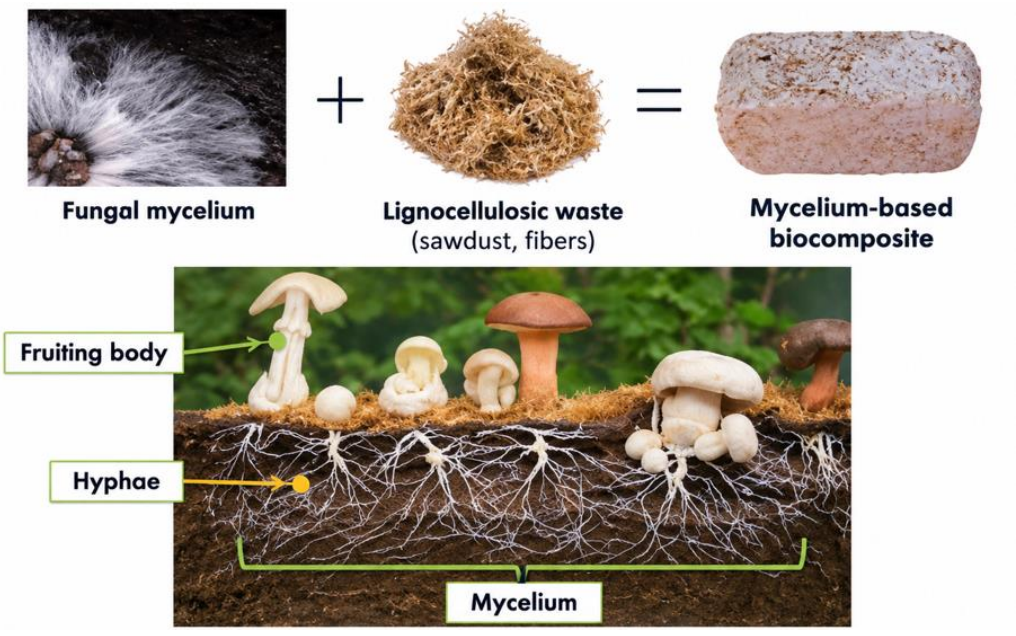
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MYCELIUM BIOCOMPOSITES: A Sustainable Alternative

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Introduction

Growing demand for sustainable materials and circular economy solutions.



Objectives

Evaluate the mechanical properties and flammability of compact mycelium-based biocomposite panels produced from *Ganoderma lucidum* and *Trametes versicolor* grown on sawdust substrates, using flexural, impact, and flammability tests.

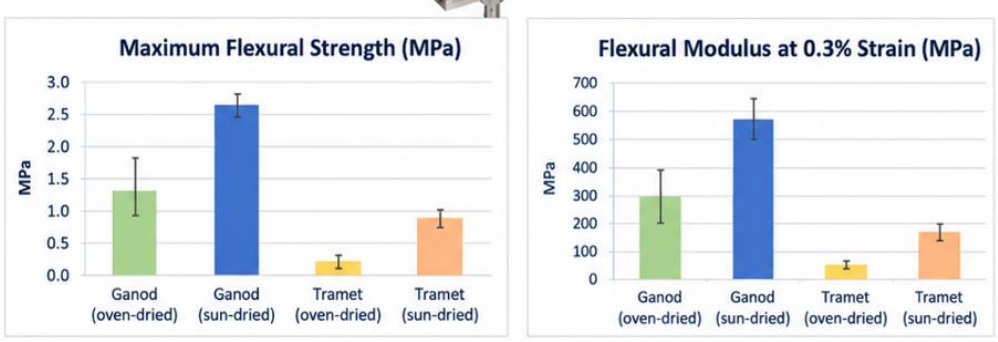
Experimental



Results and Discussion

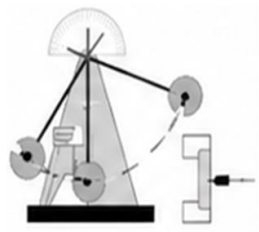
FLEXURAL PROPERTIES

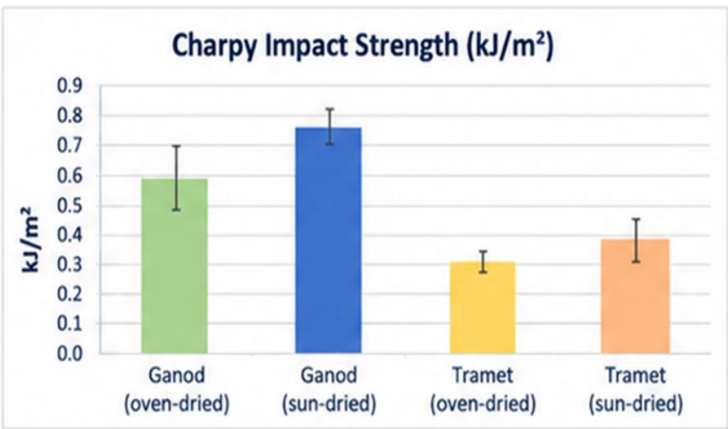




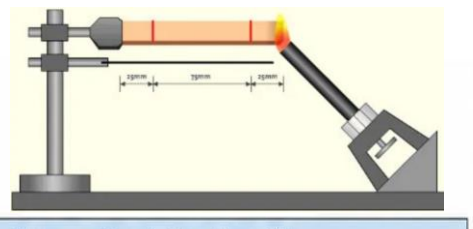
- Ganoderma showed higher flexural strength and stiffness.
- Sun drying improved the flexural properties of both fungi.

IMPACT





FLAMMABILITY



Sample No.	Flame extinguishing time (s)			
	Ganod (oven-dried)	Ganod (sun-dried)	Tramet (oven-dried)	Tramet (sun-dried)
1	6	13	7	7
2	5	9	2	3
3	14	10	2	5
4	7	5	7	9
5	7	7	-	3

- T. versicolor generally showed shorter flame-extinguishing times.
- Char formation may slow flame propagation.

- ***Trametes:*** shorter flame extinguishing time compared to the other materials, indicating higher fire resistance.
- A carbon layer forms on the surface of the mycelium, acting as a protective barrier and slowing down the flame propagation.



Conclusions

- **Mycelium-based biocomposites**: promising renewable and biodegradable alternatives to conventional materials.
- ***Ganoderma lucidum*** composites: higher stiffness, flexural strength, and impact resistance than *Trametes versicolor* composites, possibly due to differences in hyphal structure.
- **Sun drying**: better mechanical properties than oven drying for both fungal species.
- **Oven-dried *Trametes versicolor*** composites: highest fire resistance.
- Mechanical properties omparable to those of **PU** and **PE foams** (Ansys Granta Edupack)
- **Gum arabic**: an effective, renewable, and biodegradable binder for pressed mycelium composite panels.

References

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