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Peer Review

Review of: "A Review on the Mechanical, Thermomechanical Properties and Crystallinity Aspects of 3D-Printed Nanocomposites Used for Fabricating Electronic/Structural Parts"

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Including comparative tables summarizing the mechanical and thermal properties of different nanocomposites (e.g., CNT, graphene, SiO_2, Al_2O_3 fillers) would improve readability and highlight trends more clearly.

The literature coverage can be strengthened by including more recent studies on hybrid nanocomposites and sustainable 3D printing materials, such as biopolymer-based or recycled composites.

The section on crystallinity could benefit from a more detailed discussion of the mechanisms of filler-induced nucleation and its effect on print layer adhesion and anisotropy.

Adding schematic diagrams or flowcharts illustrating structure–property relationships or printing–crystallinity interactions would enhance visual understanding.

The conclusion could be expanded to highlight current research gaps and potential future directions, especially in multi-scale modeling and real-time process monitoring for nanocomposite printing.

Concrete recent studies (2022–2025) the author should add to the literature review — each with a one-line summary and why it strengthens the paper.

Specific filler-induced nucleation mechanisms to discuss (with short explanations and recommended characterization/experiments to demonstrate them).

Filler-induced nucleation controls the degree of crystallinity, crystal size/distribution, and anisotropy — all of which directly influence the tensile/flexural/modulus results reported for 3D-printed parts. See

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molecular/MD and experimental work showing that interfacial interactions and surface properties strongly control nucleation.

Declarations

Potential competing interests: No potential competing interests to declare.