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(57) Abstract :

Abstract The invention presents a method and system for creating lightweight and durable polymer composites through an AI-driven material science process. This AI-based approach optimizes composite formulations for superior strength-to-weight ratios and thermal and environmental resistance. The process leverages machine learning and predictive modeling to identify material properties, iteratively optimizing formulations through virtual simulations. The final product can be adapted across industries, including aerospace, automotive, consumer electronics, and construction, where weight reduction and durability are critical. This invention provides a novel and efficient solution to developing high-performance polymer composites.

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