Graphene-Enhanced Polyurethane Coatings for Improved Grip and Durability

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Graphene-enhanced polymer coatings are emerging as a breakthrough for highperformance surfaces requiring durability and superior friction properties. This study investigates polyurethane (PU) resins reinforced with few-layer graphene (FLG) nanoparticles to achieve enhanced wear resistance and grip performance.[1] The incorporation of FLG led to an improvement of more than 100% in abrasion resistance, a 25% increase in static friction, and a 200% increase in dynamic friction, along with a 10% increase in tear strength and Young's modulus, as shown in Figure 1. These enhancements in grip and durability occurred without significantly altering other mechanical properties of the coating. This research advances next-generation protective coatings by enhancing their mechanical and functional performance, positioning graphene as a promising additive for polyurethane anti-slip coatings.

References

[1] Alberto, M., Iliut, M., Pitchan, M.K., Behnsen, J., Vijayaraghavan, A, Composites Part B: Engineering, 213 (2021), 108727

Figures



Figure 1: (a) Tear strength, (b) relative volume loss resulting from the abrasion tests, (c) dynamic coefficient of friction and (d) static coefficient of friction of pristine PU and composite materials prepared in this study.

Graphene2025