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Quantifying Ballistic Armor Performance: A Minimally Invasive Approach GALE HOLMES, JAEHYUN KIM, WILLIAM BLAIR, WALTER MCDONOUGH, CHAD SNYDER, National Institute of Standards and Technology — Theoretical and non-dimensional analyses suggest a critical link between the performance of ballistic resistant armor and the fundamental mechanical properties of the polymeric materials that comprise them. Therefore, a test methodology that quantifies these properties without compromising an armored vest that is exposed to the industry standard V-50 ballistic performance test is needed. Currently, there is considerable speculation about the impact that competing degradation mechanisms (e.g., mechanical, humidity, ultraviolet) may have on ballistic resistant armor. We report on the use of a new test methodology that quantifies the mechanical properties of ballistic fibers and how each proposed degradation mechanism may impact a vest's ballistic performance.

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