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Changing the World's Energy Future

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Graphite Absorbs Energy From Hypervelocity Impacts Better Than Expected Probing the dynamic properties of graphite









- > Materials loaded dynamically (or at high-rates) usually show higher strengths but lower resistance to fracture than at low-rates. However, graphite does not have significantly higher strengths – but there are indications of lower resistance to fracture.
- > Dynamic material properties are required to predict the outcome of extreme events.
- Energy dissipation is a key metric to understand.





Quasistatic (Low-Rate) Testing

Graphite dissipates energy when loaded in compression as evidenced by a hysteresis loop in cyclic compression tests.

High-Rate Mechanical Loading

Graphite samples on the Split Hopkinson Pressure Bar showed significant cracking and failure along shear planes.





Hypervelocity Jet Impact

Graphite samples subjected to a hypervelocity jet impact from a small-scale shaped charge show a mass efficiency close to that of aluminum but with very narrow wound channels. Additionally, the higher strength graphite samples cracked radially.

Small-scale shaped charges provide an interesting alternative to



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