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Energy Absorbing Ceramics

Shock-absorbing high-temperature ceramic boosts rotating-detonation engine durability without added cooling.

While ceramics are ideal for high temperature applications, they are not well suited for use in environments that require high frequency loading. To address this limitation, researchers at Purdue University have developed a ceramic capable of absorbing energy. This technology can be used as a structural material or a coating for rotating detonation engines (RDEs), as it can withstand the high temperatures and frequencies associated with detonation shockwaves. Additional benefits of the use of this ceramic include improved lifespan and increased operating temperature durability.

Advantages

-Suits higher operating temperatures for RDEs

-Eliminates need for additional cooling

-Longer lifespan

Applications

-Ceramics

-Rotating Detonation Engines

-Propulsion

Technology Validation:

This technology is in the conceptual stages.

TRL: 2

Intellectual Property:

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Materials Science & Nanotechnology/Composites & Hybrid Materials

Authors
Benjamin Chi-Kien Lam
Carlos Javier Martinez
Bianka Pajo
Rodney Wayne Trice

Further information
Parag Vasekar
psvasekar@prf.org

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