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Method and Materials to Control a Ballistic Projectile's Lethality

Thermally-controlled ammunition combines standard stopping power with range limitation capabilities to significantly reduce collateral damage and bystander injury.

Currently, bullets are made from a variety of materials specific to the intended application. These bullets retain a significant portion of their energy after traveling hundreds or even thousands of meters. This can lead to undesirable consequences, such as unintended death or injury of bystanders and collateral damage, when the target is missed. Therefore, there is a need in law enforcement, military, and civilian sectors for a safer bullet that will significantly reduce collateral damage and injury.

Researchers at Purdue University have developed materials and fabrication for ammunition that becomes non-lethal after a designated distance. This is accomplished with a thermally controlled breakdown of the bullet material using the heat generated during firing in conjunction with air drag and an internal heating element to cause disintegration of the bullet over a predetermined time frame required for the projectile to traverse its accuracy range. The bullet will disintegrate as the heat conducts through the entire part, melts the low temperature binder material, and encounters drag forces. This technology combines the stopping power of standard bullets, the shrapnel-eliminating benefits of frangible bullets, and a limitation of range to decrease potential bystander injury or death.

Advantages:

-Maintains the stopping power of a traditional bullet

-Limitation of bullet range to decrease potential bystander injury or death

-Shrapnel-eliminating benefits of frangible bullets

Potential Applications:

-Law enforcement/military

Technology ID

2015-MARI-67153

Category

Aerospace & Defense/Defense Electronics & Surveillance Technologies

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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-Hunting ammunition

TRL: 3

Intellectual Property:

Provisional-Patent, 2015-04-27, United States | Utility Patent, 2016-04-26, United States

Keywords: safer bullet, range-limited ammunition, non-lethal after distance, thermally controlled breakdown, disintegrating bullet, reduced collateral damage, limited range projectile, frangible benefits, internal heating element, law enforcement ammunition