



Material Sciences

DARPA programs have developed materials processing techniques, mathematical models, and fabrication strategies for advanced structural, functional, and smart materials components that have lowered the cost, increased the performance, and/or enabled new missions for military platforms and systems.

Structural Materials Components

DARPA has taken the lead in developing structural materials used in applications where high strength/low density, performance, and safety are of the highest concern. These structural materials provide framework, structure, and environmental protection.



Ceramic Bearings



Beryllium Materials

Functional Materials Components

DARPA's functional material programs utilize the native properties and functions of materials to achieve intelligent actions. Their physical and chemical properties are sensitive to a change in the environment such as temperature, pressure, electric field, magnetic field and other properties.



Piezoelectric Crystals



Rare earth magnets



Memory Shaped Alloys

Smart materials are an emerging novel materials system combining contemporary materials science with information science. Smart materials are typically composed of sensing, processing, actuating, feedback, self-diagnosing subsystems.

Disruptive Manufacturing

DARPA funds numerous disruptive manufacturing processes which displace older manufacturing technologies and enable radically new generations of existing products and processes to take over.



Affordable Titanium



Advanced Lithography

REF: X3