

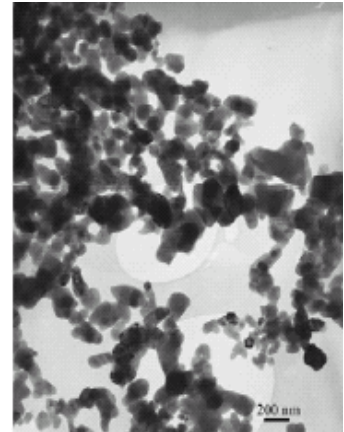
The CUNY Center for Advanced Technology In Photonics Applications (CUNY CAT)
Designated by NYSTAR, the New York State Foundation for Science, Technology and Innovation

Boron Carbide Nanomaterial Light Weight Armor

Over 45 metric tons of boron carbide per year is produced worldwide. This material is known for its high strength and hardness and low density. Only diamond has a better abrasive resistance. It is the hardest material produced in tonnage quantities.

A major application area for these high strength nanomaterials is light weight armor for personnel and light vehicles

At the heart of this technology is a new method for the preparation of nanoparticles of boron carbide in development at CUNY's Center for Advanced Technology (CUNY CAT). With this process, the particles generated are fine grained and can be produced with minimal contamination levels in the product. Using inexpensive starting precursors as well as conventional tube



Nanoparticles of boron carbide

furnace technology these materials can now be easily produced and easily scaled up for mass production. This powder is then consolidated into very light weight, high strength "slabs". Used as the protective material in armor applications these Boron Carbide Nanoparticle slabs make an extremely strong and light weight ballistic absorbing material

Applications

- Armor
- Metal Matrix Composite (Cermats)
- Structural Materials
- Abrasive Grit For Grinding And Polishing In Semiconductors (CMP).
- Blast Nozzles
- Neutron Absorber
- High Temperature Thermocouple (to 2200°C)

Advantages

- Nano-grain size
- Inexpensive process
- Controllable Stoichiometry

This technology opportunity sheet describes continuing efforts in this area. Several patents may have been issued or are pending and which may be available for licensing.

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