

Bulk materials and films that increase energy efficiency in buildings

Nanomaterials for coatings, transparencies, or composites that provide thermal or electrical switchability (transmission to reflection) of solar IR heat

Nano-enabled thermoelectric technologies for conversion of waste heat in buildings and industrial processes

Nanomaterials technologies that improve efficiency of existing lighting or provide new, more efficient lighting

Nano-enabled lighter, stronger structural materials for vehicle efficiency

Nanomaterials for coatings with enhanced conductivity for composites

Nanomaterials for component reinforcement/ lightweighting

Use of nanotechnology to inhibit barnacle formation and decrease water resistance

Tailorable dielectrics such as nonmetallic materials (glass, ferroelectrics, plastics) with enhanced breakdown voltages and nanoactuators

Nanomaterials for supercapacitors

Use of nanotechnology for lower cost, enhanced performance battery technology

Buildings

Automotive

Rail

Aerospace

Marine

Transportation

Utilization

Energy

Energy Generation
Energy Conversion
Energy Utilization
Energy Storage

Storage

Batteries/Capacitors/Dielectrics

Use of nanomaterials for enhanced strength, lighter weight wind turbines

Nanotechnologies to enable high volume, cost effective liquid and thin film coating processes for energy generation and storage

Nanostructured materials for improved efficiency, lifetime, processability, with lower cost of lightweight photovoltaics, both inorganic and organic

Geothermal

Nanomaterials such as membranes for improved performance and lifetimes for fuel cells

Hydrogen

New approaches for hydrogen generation using nanomaterials

Biomass

Nanomaterials for the generation of fuels from biosources

Nanotechnology for enhanced chemical processing and catalysts

Oil

Nanotechnology for Syngas production

Fossil Fuels

Nanotechnology for Carbon capture including membrane technology for CO2 separation

Nanomaterials for more efficient gas extraction

Fusion

Enhanced performance metals and alloys for nuclear and conventional power stations

Fission

Nanoscale sensors for power stations and individuals

Lubricants

Nanotechnology for enhanced lubrication of electrical motors

Coatings

Use of nanomaterials for coatings with reduced friction

Conversion