

SMART MATERIALS

BIZARRE MATERIALS THAT SOLVE EVERYDAY PROBLEMS

WHAT ARE SMART MATERIALS?

- AS THE NAME SUGGESTS THEY HAVE A LIMITED "THINKING" ABILITY.
- SMART MATERIALS ARE MATERIALS THAT RESPOND IN A SPECIFIC WAY ON THE APPLICATION OF AN EXTERNAL STIMULUS
- SUCH MATERIALS HAVE ADAPTABLE PROPERTIES AND HENCE FIND HUGE APPLICATION IN THE REAL WORLD SCENARIO.
- AS YOU'LL SEE MATERIALS ARE SMARTER THAN WHAT YOU THINK OF THEM?

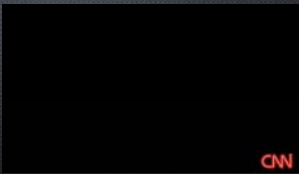
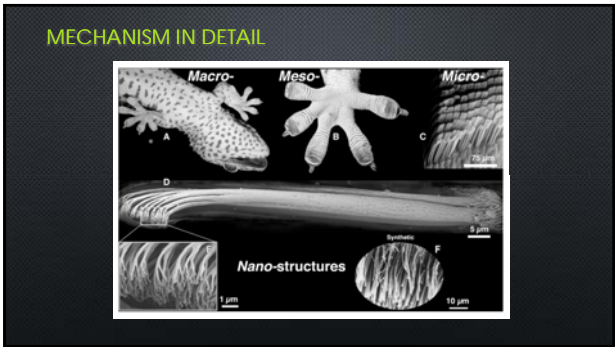
DRYADHESION™

MECHANISM

- DIRECTIONAL ADHESIVE ACTION
- SMALL AMOUNT OF PRELOAD
- MIMICS A GECKO

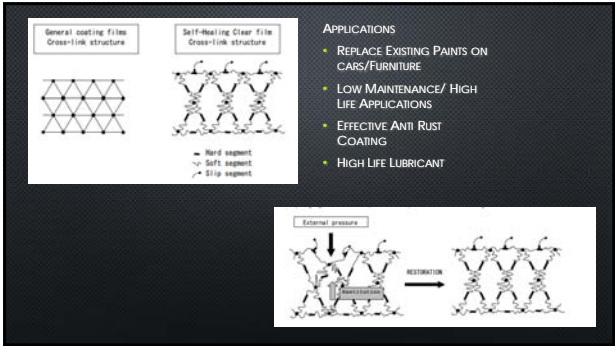
APPLICATIONS

- MAJOR SURVEILLANCE OPERATION
- DEFENCE OPERATIONS
- SEARCH AND RESCUE
- WALL TRAVERSAL

SELF HEALING MATERIALS

A MATERIAL DEVELOPED BY CASE WESTERN UNIVERSITY, ACCIDENTLY



SHAPE CHANGING MATERIAL/FOIL

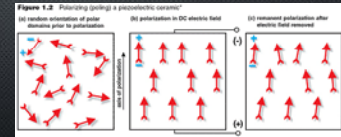
APPLICATIONS

- VARIABLE GEOMETRY AIRCRAFTS/ CONTROL SURFACES
- ENGINE INLETS
- HELICOPTER ROTOR BLADES
- SHIP HULLS
- WIND TURBINES
- F1 CARS



PIEZO ELECTRIC CERAMICS

SIRAIN IS GENERATED IN THE MATERIAL ON APPLICATION OF ELECTRIC FIELD AS ELECTRIC DIPOLES RE-ARRANGE THEMSELVES TO ALIGN THEMSELVES TO THE ELECTRIC FIELD, HENCE DISTURBING THE CRYSTAL STRUCTURE.

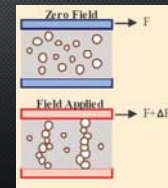


MAGNETO RHEOLOGICAL FLUID



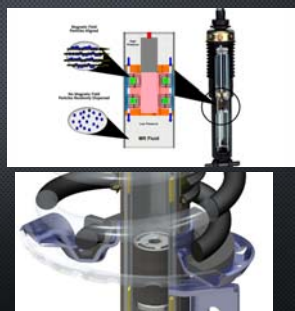
PRINCIPLE

- MICRON SIZE PARTICLES GET ALIGNED IN A PARTICULAR ORDER TO GENERATE HIGH AMOUNT OF SHEAR STRENGTH ON A PLANE PERPENDICULAR TO THE PLANE OF ALIGNMENT.



APPLICATIONS

- HELICOPTER LEG DAMPERS
- AUTOMOBILE SUSPENSIONS
- ANTI-EARTHQUAKE BUILDINGS



THANK YOU