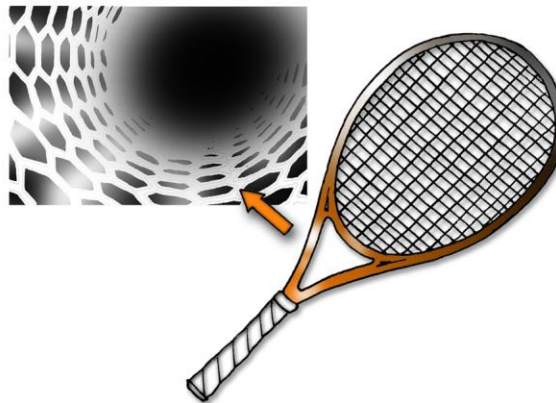
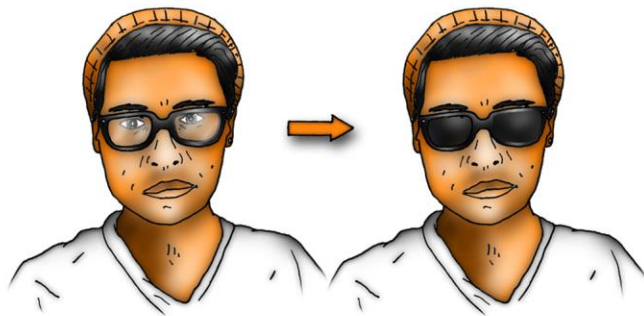


# KnowIT

## SMART AND MODERN MATERIALS



### Shape memory alloys

A metal-based smart material

- Can you name the two main materials used to make a shape memory alloy.
- Can you state two products where shape memory alloys might be used.
- Can you state another name also used for shape memory alloys.

### Piezoelectric material

- Name three products where you would find piezoelectric material being used.
- What mechanical force can be applied to piezoelectric material to make it produce an electrical voltage.

### Thermochromic pigments and inks

- State two products where this smart material might be used.
- What external stimulus is needed to make this smart material react.
- What type of plastic are thermochromic pigments usually used in.

### Quantum tunnelling composite

- Can you state two characteristics of QTC.
- Name two places where QTC might be used.

### Smart glass

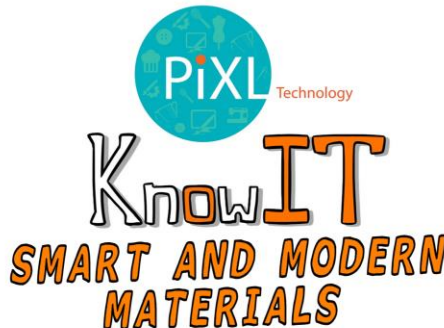
Smart glass is a smart material that changes from a transparent state to a translucent state.

- What external stimulus makes this smart material work?
- State two advantages of having this glass on a building.
- Does the reaction in this smart material happen instantly?

### Photochromic material

Photochromic glass is a smart glass that changes from a transparent state to a semi-transparent state.

- What external stimulus makes this smart material react?
- What happens when the stimulus is removed?
- Does the reaction in this smart material happen instantly?



### Nanomaterials

- State two products where nanomaterials have been used.
- State two material properties that nanomaterials usually have.

### Polymorph

Polymorph - a smart material that can change shape from a solid to mouldable state and then back into a solid.

- What type of plastic is polymorph?
- At what temperature range does polymorph melt?
- Where can polymorph be used?