SUNLIGHT INTO ELECTRICITY USING NANOTECHNOLOGY

I CAN’T WAIT TILL THESE SOLAR PANELS ARE CONNECTED! YES! ELECTRIC LIGHT WILL BE A BIG IMPROVEMENT ON CANDLES!

BUT HOW DO THEY WORK? WITH NANOTECHNOLOGY, USING CARBON NANOTUBES, SUNLIGHT WILL BE TRANSMFORMED INTO ELECTRICITY.

NANO MEANS SMALL—VERY SMALL, AND NANOTECHNOLOGY IS OPENING UP A WHOLE WORLD OF NEW POSSIBILITIES—LIKE ENERGY, STRAIGHT FROM THE SUN! WOW, NANOTECHNOLOGY SOUNDS ELECTRIFYING!

LET’S TAKE A JOURNEY INTO THE NANOWORLD TO FIND OUT MORE.

THESE SOLAR PANELS ABSORB SUNLIGHT. WE’LL HAVE TO GET SMALL TO SEE HOW THEY WORK.

THIS PANEL IS 4 MM THICK AND IT’S MADE UP OF LOTS OF LAYERS. WE NEED TO GET MUCH SMALLER TO REACH THE NANO WORLD.

4 mm (four millimetres) = 4 000 000 nm (four million nanometres)

TRANSMISSION ELECTRON MICROSCOPE (TEM)

THE NANOWORLD IS SO SMALL THAT IT CAN’T BE SEEN WITH THE NAKED EYE OR REGULAR MICROSCOPE. SCIENTISTS DON’T REALLY SHRINK, THEY HAVE SPECIAL INSTRUMENTS TO LOOK AT THE NANOWORLD.

- This microscope focuses electrons at an object to be viewed.
- The electrons move through the object and form an image.
- The image is captured by a camera and sent to a computer screen.

A TRANSMISSION ELECTRON MICROSCOPE HELPS SCIENTISTS LOOK THROUGH MATERIALS TO SEE INSIDE THEM—LIKE THESE CARBON NANOTUBES.

THIS LAYER IS MADE COMPLETELY OUT OF CARBON AND IS LESS THAN 1 MM THICK. LIGHT GETS TRAPPED IN THE HAIR-LIKE STRUCTURES AND ABSORBED.

LET’S GET SMALLER AND SEE WHAT IT LOOKS LIKE!

40 microns (forty micrometres) = 0.04 mm (forty thousand nanometres)

NANO CAREERS

NANOTECHNOLOGY IS IMPACTING OUR LIFE IN MANY WAYS. A WORLD OF CAREER AND RESEARCH OPPORTUNITIES IS WAITING TO BE EXPLORED.

- AUTO AND AEROSPACE INDUSTRIES
- ENVIRONMENTAL MONITORING AND CONTROL
- FOOD SCIENCE INCLUDING QUALITY CONTROL, AND PACKAGING

THIS CARBON NANOTUBE IS 4 NANO-METRES WIDE. NOW WE MUST BE IN THE NANOWORLD.

YES, NOW WE ARE IN THE NANOWORLD — AND WHEN SUNLIGHT HITTS THESE CARBON NANOTUBES, ELECTRICITY IS CREATED... WHICH CAN BE STORED IN BATTERIES...

AND USED FOR LIGHTS.

40 microns (forty micrometres) = 0.04 mm (forty thousand nanometres)