



CARBON NANOTUBES FUNCTIONALIZATION FOR VARIOUS APPLICATIONS

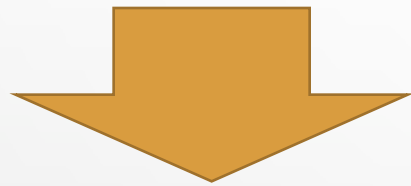
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MATERIAL SCIENCE

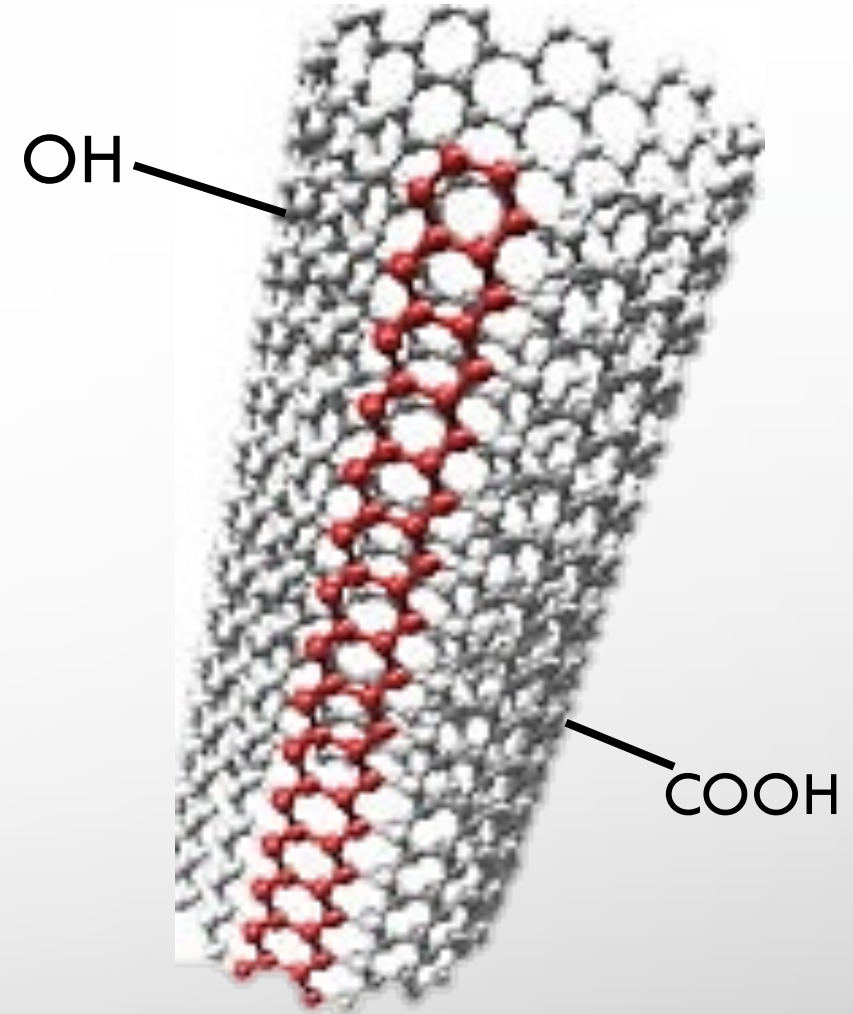
WHAT ARE CARBON NANOTUBES ?

- MADE UP OF CARBON **HEXAGONS**
- STRONGEST MATERIAL ON EARTH
- GOOD CONDUCTIVITY / HEAT RESISTANCE.....



FUNCTIONALIZATION

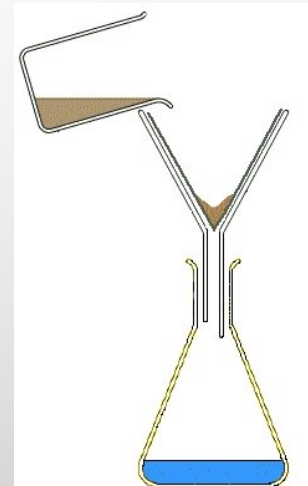
- ★ BETTER INTERACTIONS WITH MORE MATERIALS
- ★ APPLY TO COMPOSITES/BIOLOGY/SENSORS



MY OWN PROJECT

functionalization

- HEAT TREATMENT
 - ★ 400~440°C
 - ★ stir every 30 min
 - ★ leave it 4 hours
- ACID TREATMENT
 - ★ 70% HNO₃
- FILTRATION
 - ★ wash 3~4 times
 - ★ leave it 48 hours to dry

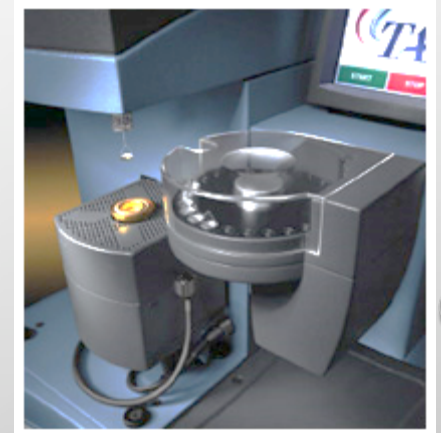
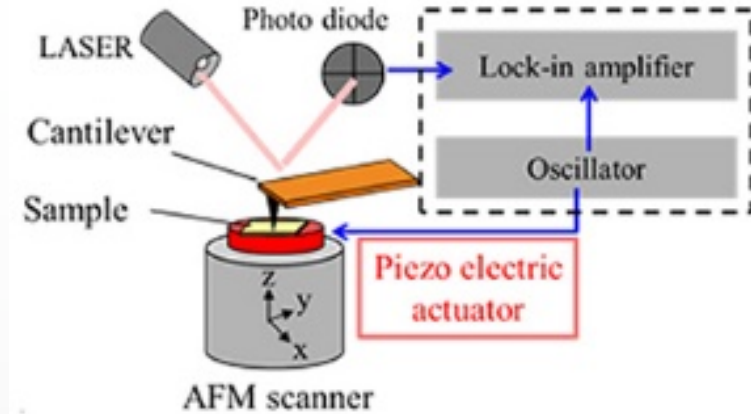


FINAL PRODUCTIONS!!



MY OWN PROJECT (IN FUTURE)

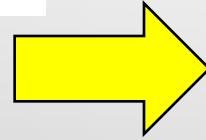
characterization
and
quantification

- Atomic Force Microscope (AFM)
- Infrared spectroscopy
- Thermogravimetric Analysis(TGA)
- X-ray photoelectron spectroscopy (XPS)
- Transmission electron microscopy
- Raman spectroscopy
- Scanning electron microscopy
- Photoluminescence spectroscopy.



U.S.A. vs JAPAN

	 U.S.A.	 JAPAN
Popular Food	Wheat/Beef/Chicken	Rice/Fish/More vegetable
Culture	Independent	Group



Similar!

- Campus
- Education System
- Personality
- Facilities/Equipment

MY LIFE IN HOUSTON

MUSEUM &
ZOO



NASA



RODEO





Thank you 😊

