

Development of nano-carbon materials for IoT device

Carbon nanotube

Carbon nanohorn aggregate

Carbon nanobrush

- Semiconducting CNT ink for thin film transistor application was developed.
- Mass production technique of CNHs was developed and the product is on sale.
- Continuous preparation technology of carbon nanobrushes was developed.

Carbon nanotube (CNT)

□ Separation technology of metallic- and semi-conducting CNT for thin film transistor application

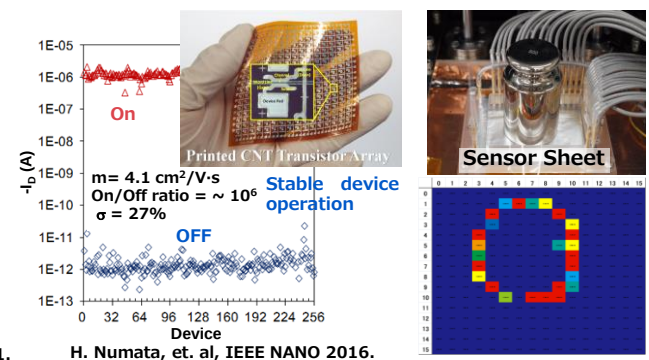
➤ Electric-field-induced layer formation (ELF)

- ✓ Semi-conducting CNT of above 99%
- ✓ Non-ionic surfactant: stable operation of device



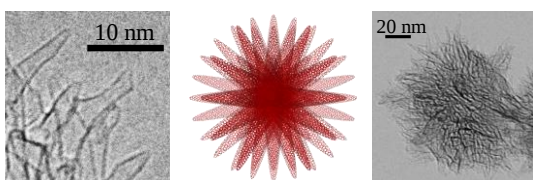
Application technology

□ Printed CNT transistor array with CNT ink



Carbon nanohorn aggregate (CNHs)

- Uniform particle size
- Large surface area
- High dispersibility
- High purity · Safety
- Incorporation of various materials



Application technology

□ Production rate of 100 g/h (1 kg/day)

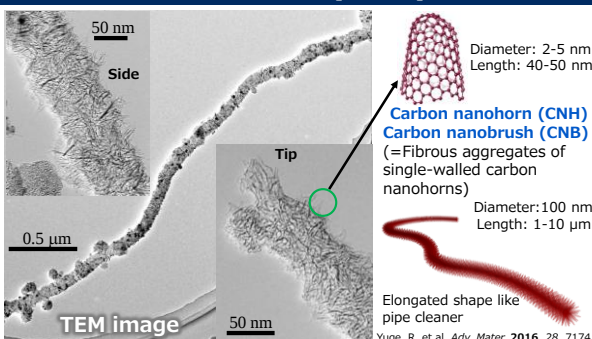
□ Application for energy and medical field

Large scale manufacturing equipment



Feature	CNHs	Hole-opening CNHs
Purity	90% 10% (Graphite, a-C)	
Surface area	400 m²/g	1400 m²/g
Dispersibility	Hydrophobic	Hydrophilic
Conductivity	1.0 S/cm	

Carbon nanobrush (CNB)

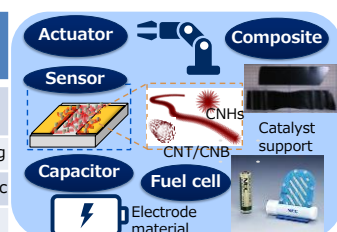


Application technology

□ Establishment of production method of 10 g/day

□ Potential application for IoT and energy device

Feature	CNB	Hole-opening CNB
Purity	70% 30% (Graphite, Metal)	
Surface area	400 m²/g	1600 m²/g
Dispersibility	Hydrophobic	Hydrophilic
Conductivity	10 S/cm	



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