

# CNT HSPICE Modeling and Analysis

## Survey

Name: \_\_\_\_\_

1. What is CNT? What properties make it different from existing Technology?

CNT: Carbon Nano Tube. ~~Field Effect Transistor~~

It possess the characters of high tensile strength, thermal conductivity. It possess remarkable Mechanical, Elec, <sup>Chemical</sup> <sup>prop</sup> properties. Their atomic structure makes them unique from existing technologies. It can be metallic or semiconducting.

2. Explain various CNT synthesis process? And which is better?

Arc-discharge: Easiest / Common. It involves growth

Laser-ablation: By laser vaporization of mixture of carbon & metals.

Catalytic: Referred to as Chemical Vapor decomposition.

Decomposition is done in presence of carbon.  
CVD has greater potential of all the methods.

3. Differentiate CNFET and CMOS in terms of

- a. Power dissipation (based on the HSPICE analysis)

CNFETs are considered to be final shrink that will end the scaling around 5nm physical gate length.

Maximum power dissipation for CMOS is difficult.

4. What are the critical issues in CNT technology that might be a design bottleneck?

Bulk production is hard with CNT technology.

Expense production, Critical lifetime,

Perfect control of the catalytic CNT growth process is needed.

High current applications.

## Self Evaluation and Feedback

1. What more would you like to see included in this lecture?

In depth study on CNP and its synthesis methods. Also its competency with existing technologies.

2. Will this lecture help you in your future to learn more about nano circuit design? If yes then how?

This lecture is a kind like asset and tutorial on HSpice made us ease of understanding software. I find myself answerable during interview.

3. How effective you think you learnt through these two lectures <sup>one of</sup>  
A ~~through~~ thorough understanding of the future technology. Ease with HSpice software.

4. Are you more likely to register for a design course using emerging nano-devices

If there is any possibility, I look forward to register for the course.