**Journal Club Assignment #3**

**Defect-Free Carbon Nanotube Coils**

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1. Define the following terms found in the abstract and/or introduction of this article. You may want to consult online sources or reference materials in the classroom.

* Carbon Nanotube
* Single-wall Carbon Nanotube
* Scanning Electron Microscopy
* Transmission Electron Microscopy
* Atomic Force Microscopy

2. In the fourth paragraph of the article it is noted that self-coiling takes place on regular silicon substrates. How is this different from previously reported results?

3. Consult Figure 2. There are essentially four sets of data here. Using figures 2a-c as a representative example, what is the relationship of Figures 2b-c to 2a? In other words, what is depicted in in each of the three figures?

4. The formation of defect-free coils is described in the first paragraph on pg. 2154. What intermolecular force is responsible for the coiling of the carbon nanotubes? Why don't the tubes just randomly plop down like a string would?

5. Also on pg. 2154 (second column, starting in the second paragraph) the electrical properties of these nanotubes is mentioned. A typical Cu or Ag wire conducts electrons in a linear fashion (even if coiled). Something else is going in the carbon nanotubes however. What process is described in these paragraphs?

6. In the last paragraph of this article the authors point out a problem with the design of single wall carbon nanotubes. The authors also point out a possible solution to this problem. What is the proposed solution?