NOTES FOR GEORGIA TECH PRESIDENT G. WAYNE CLOUGH
NNIN Annual Meeting, December 3, 2004

- Welcome National Nanotechnology Infrastructure Network to GT Hotel and Georgia Tech.

- Nanoscience and nanotech have now blossomed to the point where they are generating a lot of exciting things with tremendous potential. A few examples from Georgia Tech:
    - Pioneering work in application of nanotechnology to biomedical uses. E.g. quantum dots.
        - One type: move through the body, bond with cancer cells, then give off fluorescent glow – non-invasive, accurate detection. Particles selective by type of cancer and glow in different colors.
        - Another type: imaging within individual cells; "injecting" material into cells; tracking protein molecules.
    - Creation of seamless "nano-rings" – a new nano-scale building structure made of nano-belts rolled into seamless coils.
    - Composites made with carbon nano-tubes that offer improved electrical and mechanical properties.
    - Transferring information from atoms to photons.
    - Techniques for surface patterning, etching, enhancing on the nano-level – precursor for nano-manufacturing.
    - Nano-porous electrodes that boost performance in fuel cells, batteries, sensors.

- Tech pleased to host this annual meeting. Believe NNIN has important role to play:
    - Offers opportunities to collaborate in research and make maximum use of facilities – e.g., Tech has $4 million electron-beam nanolithography system, one of only a few in the nation, which can be shared.
    - A tool for outreach and education: K-12, undergraduate, and professional education.
    - Also offers important framework for discussion on the many facets of nanotechnology, especially safety and social/ethical dimensions.
        - Annual meeting especially important in serving the need for discussion – this year focuses on societal effects, safety.
        - Experiences with genetically engineered foods, nuclear energy, stem cell research demonstrate importance for society to believe in need for technological advances, have faith that they will be used wisely, safely.
        - Problem of unrealistic expectations: Be careful not to encourage high expectations in short time-frame. Emphasize long time-frame; provide intermediate evidence of progress.

- Need to recognize that the context for "doing" science and technology is changing:
    - Growing more interdisciplinary; new frontiers for discovery increasingly in the gaps between traditional disciplines.
        - Nanoscience and nanotechnology are especially multi-disciplinary – structures like NNIN help us collaborate.

- World faces a number of seemingly intractable problems calling for technological solutions
  - Can no longer simply develop technology and put it on the shelf. Need to understand the larger social, human context in which it must function.
  - Use technology in creative ways to solve pressing problems facing humanity, create opportunities for prosperity.
  - Especially important for nanotech, because of its potential to touch virtually every aspect of our lives.
- 21st century global economy: nations like China, India, and Russia are investing in science and technology education and research.
  - PCAST Nanotechnology Task Force: briefed on nanotech activity around the world, especially EU Science Board. Everyone investing. Very competitive environment. Need to be both strategic and collaborative.
- Innovation is key to our future economic prosperity: Not only being first to discover new knowledge and invent new technology, but also first to put it to work in creative and innovative ways that make life better.
  - "The world leaders in innovation and creativity will also be world leaders in everything else." (Harold McAlindon, author and business consultant)
  - NII: develop action agenda to help nation build economy based on innovation.

- Nanotechnology has tremendous potential to produce ground-breaking innovations that change the paradigm for the way people live, work, and interact around the world.
  - But need to be strategic and coordinated in our research and innovative in how we put it to work.
  - NNIN is a tool to help us do that.