

CNS-UCSB

Center for Nanotechnology in Society



NSF SES 05-31184

Nanotechnology in California

Simone Jackson
Allan Hancock College
Mechanical Engineering & Mathematics
Mentor: Christine Shearer
Faculty Advisor: Barbara Harthorn



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Why Study Nanotech Companies?

Congress requested that the Center for Nanotechnology in Society (CNS) provide concrete data on nanotechnology industries

- 2011 National Nanotechnology Initiative (NNI) budget is \$1.8 billion for nanotech R&D
- Nearly 50 percent of nanotechnology funding worldwide comes from government



Why California Companies?

- Jan. 2010 California Council on Science and Technology (CCST) report states CA:
 - Receives 41% of US venture capital
 - Houses 25% of the US nanotech companies
 - Nano industries have potential to create 90,000-200,000 jobs by 2015
- Approx. 50% of US nano funding is from large industry, many of which do business in CA

Results of research will lead to:

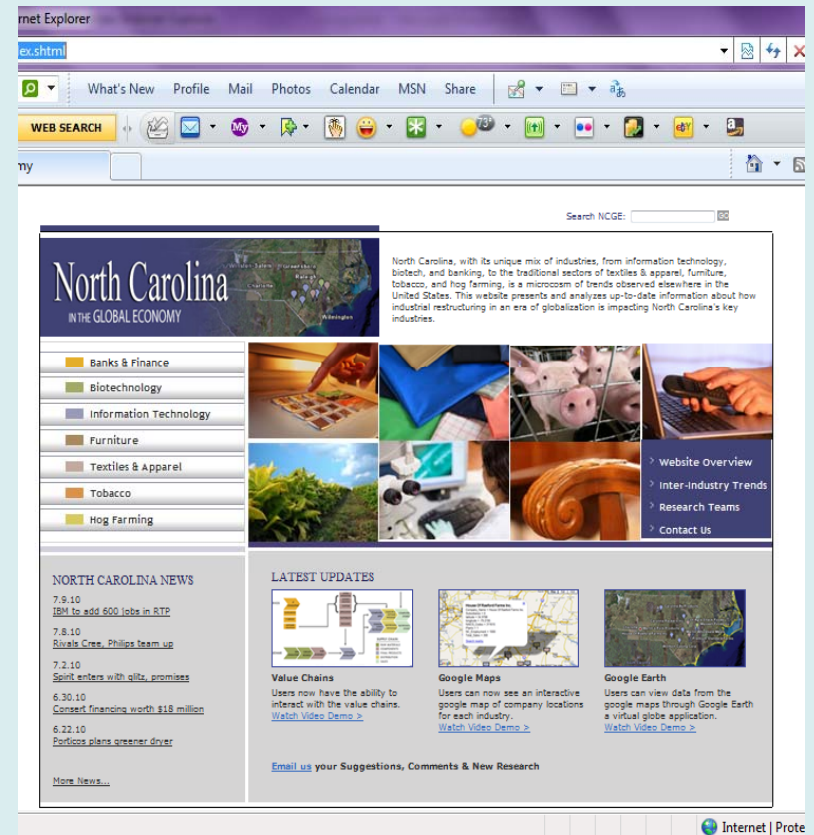
- Validation for the value of research conducted at California institutions
- Continued government funding

Objectives and Research Goals

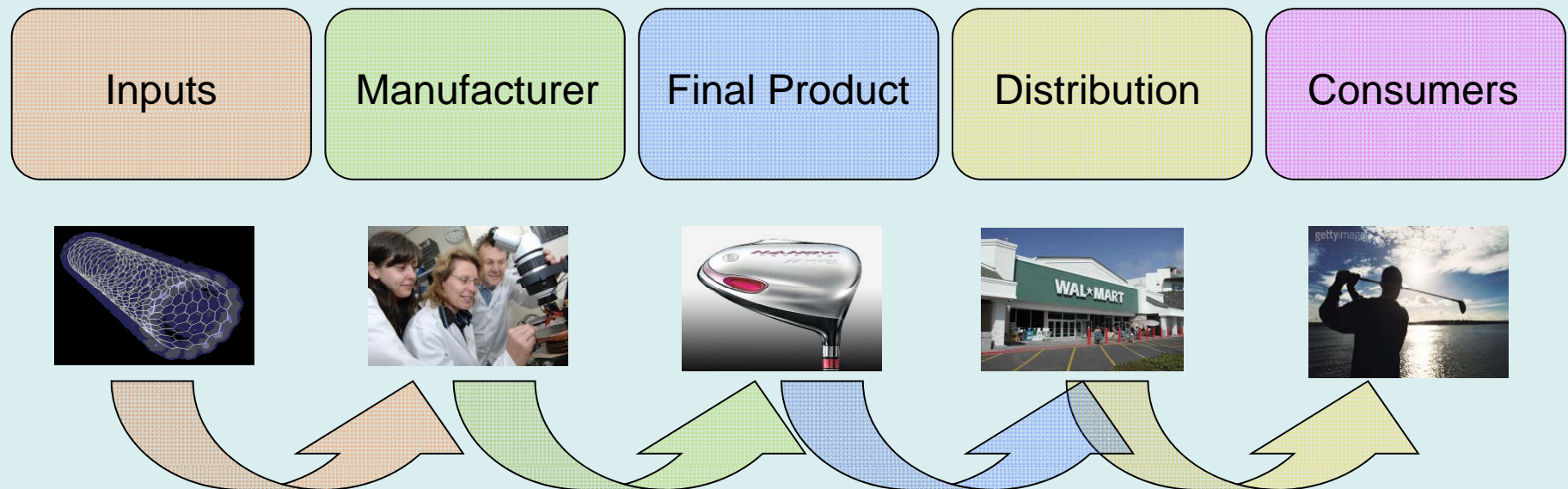
Ultimate objective is to create a comprehensive website detailing California nanotechnology

Immediate goals:

- To begin to build a global value chain (GVC) mapping nano industries
- To try create more accurate nanotech data



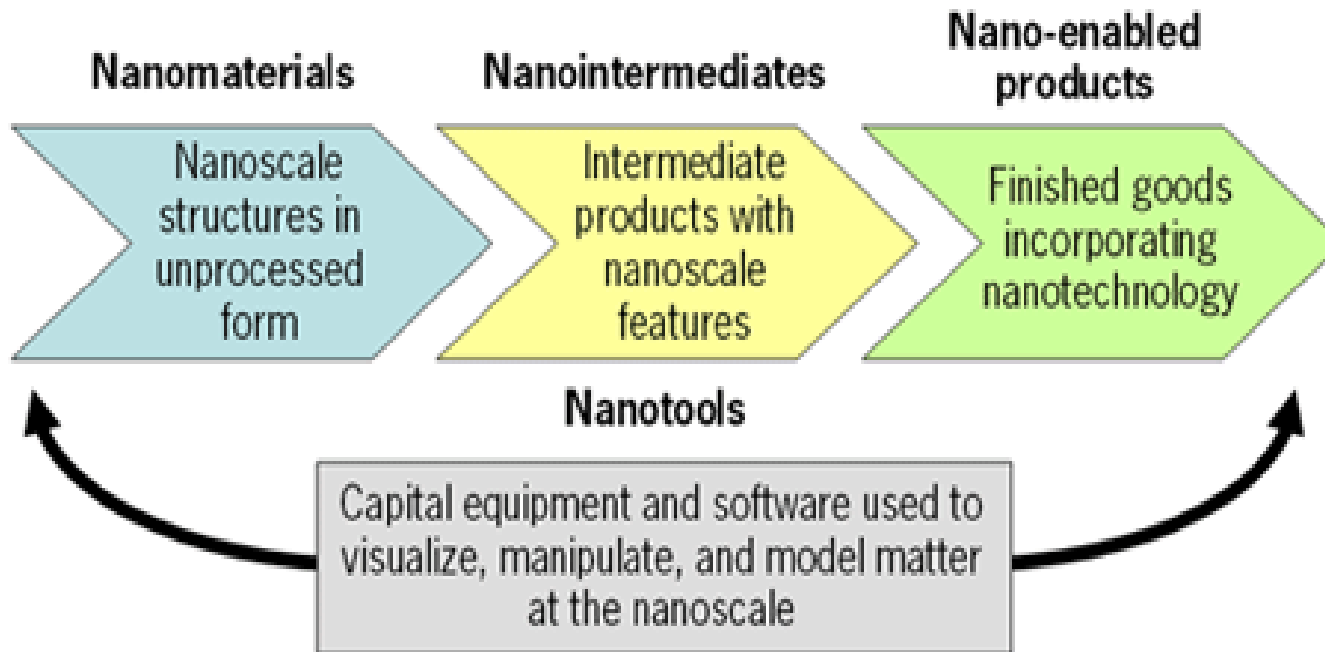
The Global Value Chain (GVC)



A Global value chain (GVC) is a graphical representation of the interconnections between firms and value added in the global marketplace

slide: 2009 CNS intern Ryan Shapiro

The Nanotechnology Value Chain



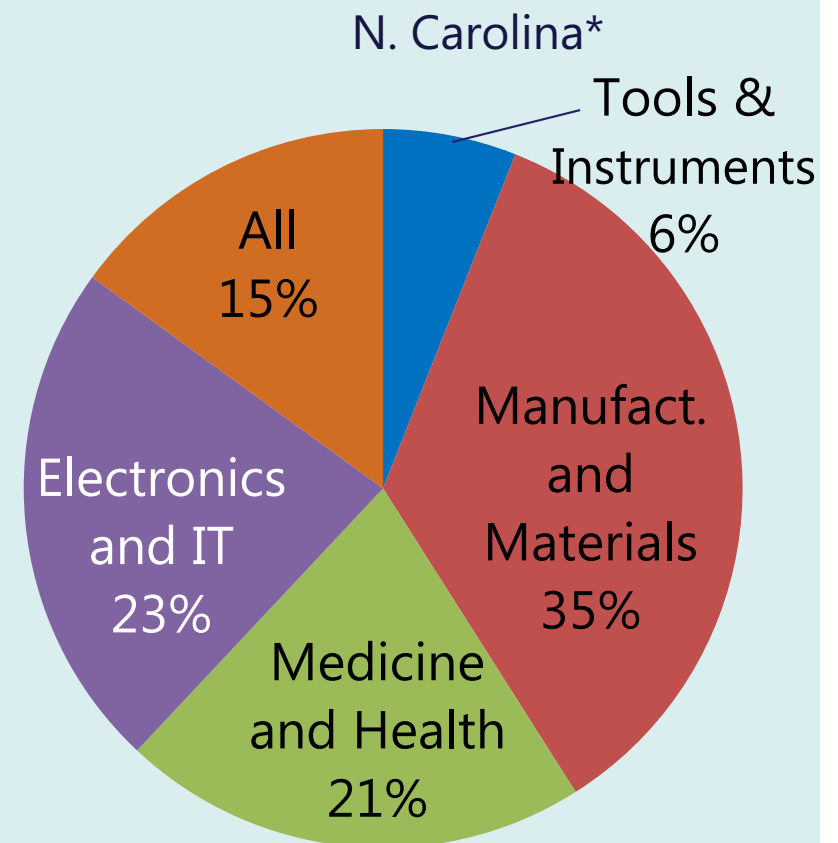
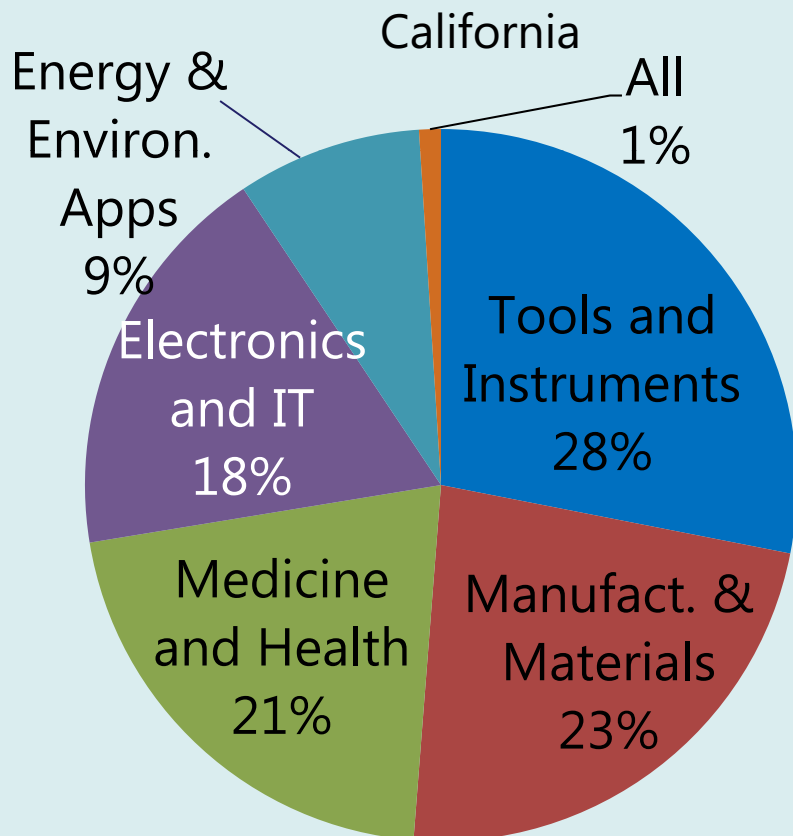
Research Methods

- Companies are identified using four online databases
 - Plunkett Research Online
 - Nano Science and Technology Institute (NSTI)
 - Lux Research, 5th ed.
 - Woodrow Wilson
- Data analysis includes:
 - Location, Market, Products/Services, Supply Chain Position



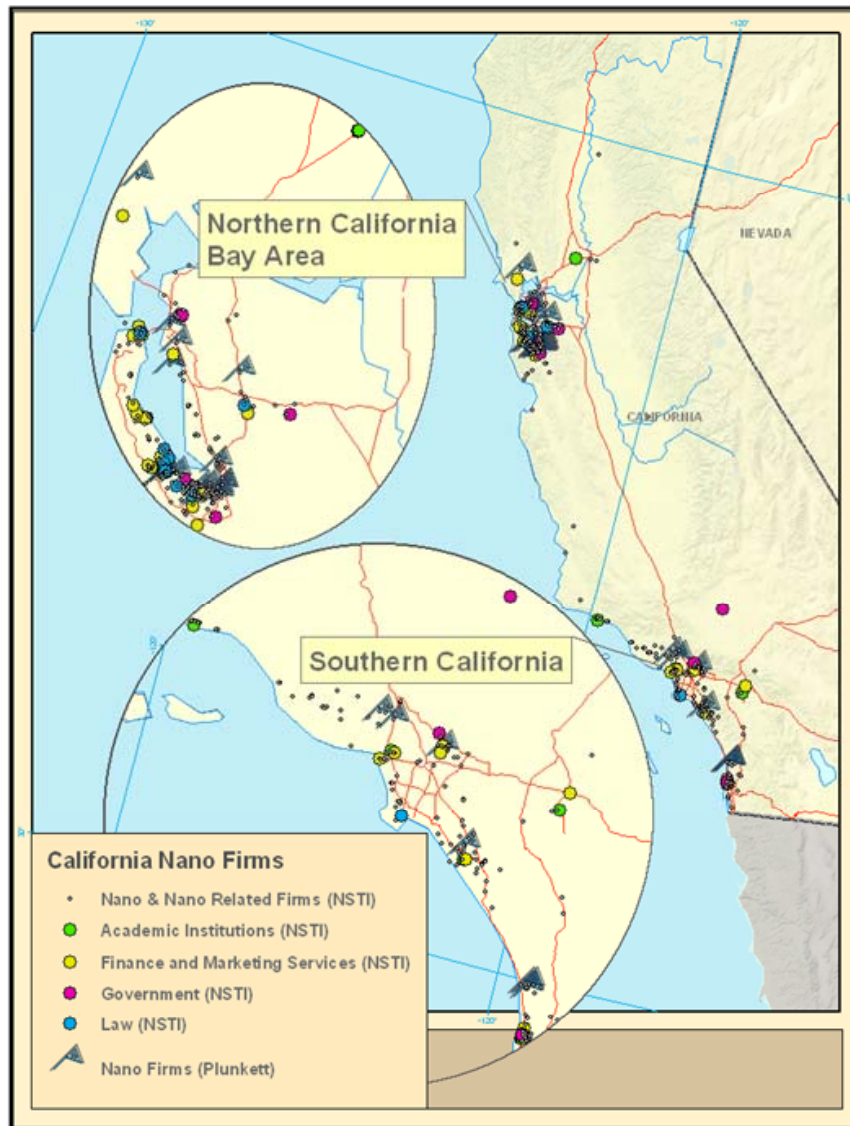
Companies By Sector

Based on 203 California nanotech Companies analyzed (WW, Lux, Plunkett, and a subset of NSTI firms)



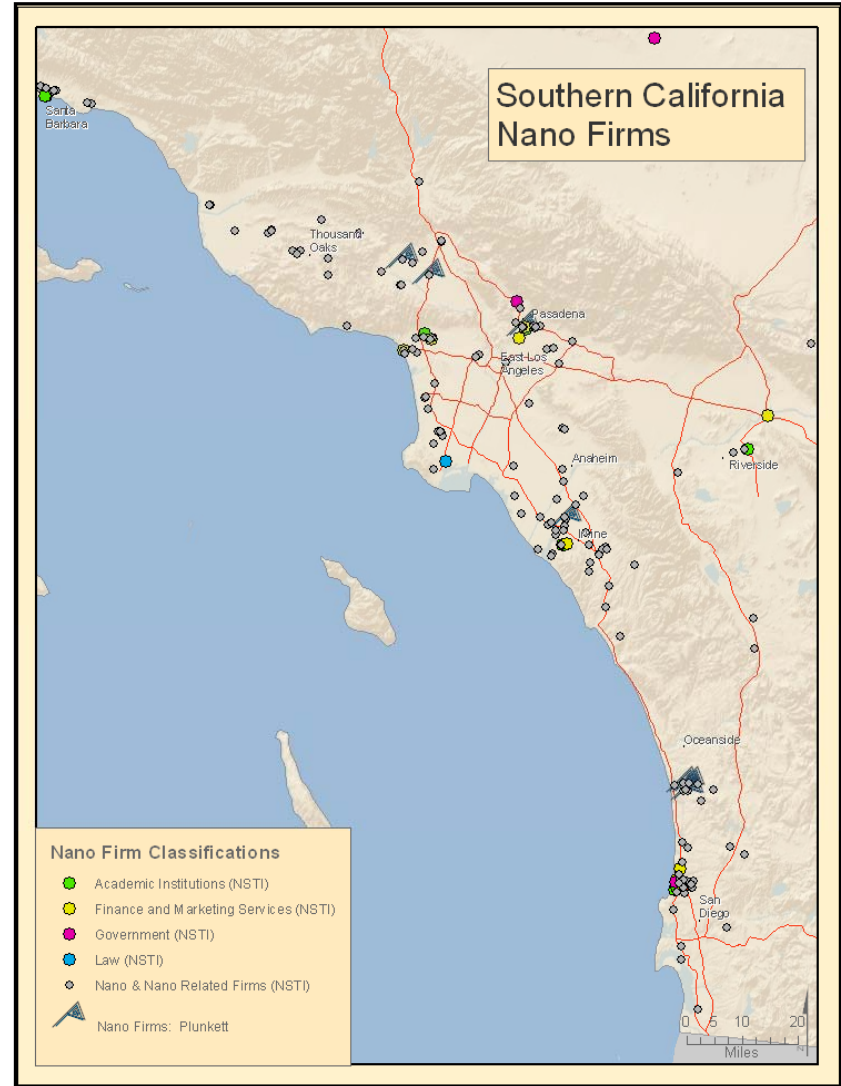
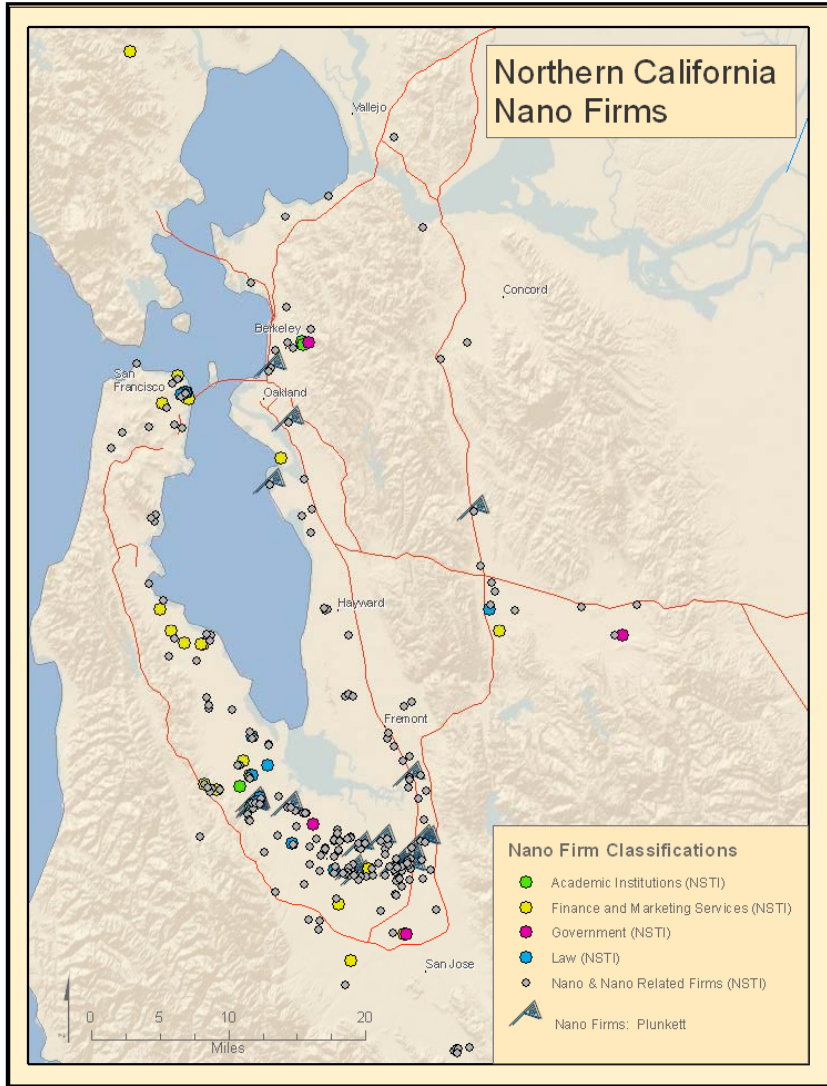
**courtesy of Gary Geferra and Stacey Frederick*

Locations of Identified Firms



- Locations of nearly 500 California nanotechnology firms identified through NSTI and Plunkett

map created by Indy Hurt



maps created by Indy Hurt

Nano in Santa Barbara

- Seven firms identified as being in SB from the four databases
- Most are venture start-ups whose focus on nano is mainly tools and instruments
- A 2008 study identified Santa Barbara as being the 10th most prolific metro area in terms of nano publications (1990-2006)
- Shows how government funded research can help spin off smaller firms?

A Closer Peek into SB Firms

Anasys Instruments

Makes tools used in nanoscale measurement of thermal and other material properties



Atomate

Products specializes in the synthesis of carbon nanotubes and nanowires



Challenges

- No independent sources of data
 - Data obtained is sometimes questionable
- Information is sometimes out of date, incomplete
 - Gaps in info filled in through internet research and Securites & Exchange Commission (SEC) filings
- Lack of standard nomenclature
- Number of nanotech firms is unknown

Conclusions

- There is obviously a need for more independent sources of data
- More accurate knowledge of nanotech firms will help all aspects of nanotechnology

Future Plans

- Incorporate more databases: NanoVIP, Nanowerk, others?...
- Incorporate more information on CA research institutions in the nano GVC
- Preliminary analysis suggests CA firms playing a large role in nano tools and instruments - how might this change in the future?
- How might these CA firms evolve, and where will the next firms be located? How might a nanotech "breakthrough" change this?



Special thanks to:

*The National Science Foundation (NSF SES
05-31184)*

Thanks also to:

*CNS, INSET, Christine Shearer, Barbara
Harthorn, and Stacey Frederick*

General Nanotechnology Value Chain

