NanoBank: A National Resource Now under Construction

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A: NanoBank

Q: What has Jane Doe published and patented in nanoscale S&T?
   ● Q: Is she founder or key employee of any firm?
   ● Q: With whom has she patented and published?

What firms work on/sell <topic/product>?
   ● Q: What patents do they hold?
   ● Q: What is their financing?
   ● Q: Who has written as or with an employee?
NanoBank: A Value-Added Information Resource

NanoBank will provide accessible, integrated, free information in user-friendly, learning-friendly form

Lynne Zucker, UCLA
Principal Investigator for NanoBank
NanoBank Combines, Adds & Integrates Information

- Scientific articles, patents, firms, universities, national labs, nonprofit interest groups
- Detailed info on authors/inventors by name, affiliation, location(s), discipline/dept.
- New info: Firms’ nanotech products in development and on market
- Link info: scientific to patenting productivity, university to company research
- Link NBIC with analogies via images, e.g. current flow in transistor (info) and carbon nanotube
**NanoBank.org: Examples of Defining Data Element Links**

**Name of Person**
- Patent inventor
- Article author
- Principal investigator (PI)
- Dissertation author
- Dissertation chair
- Officer/founder of firm
- Science advisory board chair
- Science advisory board member
- *Coinventor, author, etc.*

**Organization**
- Patent assignee
- Affiliation on article
- Grant/contract recipient
- University lists—NRC, IPEDS
- Firm directory listings
- Public firm databases (filings)
- Financial market databases
- Mergers & alliances database
- Venture capital firm database
- Investment bank database
- Federal laboratory listings
- Research institute directories
- Organization's parent org. (if any)
- *Non-profit directories, tax filings*

**Inputs, Outputs, and Success Measures**
- These can be measured at person, organization or sub-organization level and aggregated (as appropriate)
- based on: organization; city, state, region or country; discipline, industry, science/technology area, time; or combinations (e.g., by firm, region, and year)
- Patent: counts, citations, claims
- Articles: counts, citations
- *Employment (& membership for nonprofits)
- *Interdisciplinary Collaborations: counts, classifications, citations for articles and patents
- Products in development: counts, classifications
- Products on the market: counts, classifications
- Venture capital: round counts, round values
- Offerings: IPO value, later offering values and types
- Investment bank reputation rankings
- Stock price history
  - Impact of risk assessment on stock price:
    1. Product failure, adverse event news
    2. NPO report, event news
- Doctoral programs: ranking, graduates, faculty, funding
- Awards: Nobels, NAS/NAE/IOM, Phi Beta Kappa, etc.
- Grants/contracts: Federal, SBIR, ATP
- *Interdisciplinarity
  - *Cross-discipline co-chair on dissertation: counts
  - *Cross-discipline co-authors, co-inventors: counts, citations, claims for patents
  - *Cross-discipline firm officers, firm science boards: counts
  - *Cross-discipline articles in old & new journals: counts, citations
  - *Cross-discipline membership: depts., instits., centers, IGAs: counts
- **NBIC Interdisciplinarity Convergence**
  - *Analogies/images of cross-discipline concepts
  - *New cross-discipline analogies/tools
  - *Cross-discipline teaching, patenting, research

**Discipline of Person**
- Department, current or former [2]
- Department of dissertation [2]

**Date or Time**
- Patent application & grant dates
- Article publication date
- Grant/contract begin & end dates
- Dissertatation filing date
- Dissertation filing date
- Directory/database dates
- Firm founding date
- Firm nanotech entry date
- Financial reporting dates
- Initial public offering (IPO) date
- Merger or alliance dates
- Venture capital round dates
- *Interdisciplinary team start dates
- *Dept., institute, center entry/change/merger date
- *New interdisciplinary journal areas/start date
- *Existing journal new discipline/area entry date
- *Fed. Instil., IGA program start date
- *Date of move between disciplines [3]

**Industry of Organization**
- Firm/university/fed lab/res. Inst.
- SIC or NAICS industry codes
- Venture Economics industry codes
- *Nonprofit tax codes [501(c)(3), etc.]

**Science & Technology Area Codes**
- US & International patent classes
- ISI journal area
- PACS codes/text
- Nano S&T subareas (VJNano et al.)
- Z-D broad science/tech area codes
- *NBIC product codes

**Geo-location**
- Patent inventor's address
- Patent assignee's address
- Author address
- Grantee address(es)
- Organization address(es)

**Notes:**
- * indicates added NBIC elements
- [1] Identify and search on specific terms in all NBIC areas.
- [3] E.g., if dissertation discipline is different from department of first job.
Other NanoBank Features

- Vetted socio-economic analyses of impacts from basic science & engineering discoveries
- Open discussion areas will help identify emerging concerns
- Graphics will draw public, press, policymakers, students

Robert Liu
NanoBank Lead Programmer
NanoBank Shows Where and When Firms Use Nanotech

Nanotech-using Firms by BEA Economic Regions

- 6
- 3
- 0.6
NanoBank Shows Where and When Firms Use Nanotech

1996

Nanotech-using Firms
by BEA Economic Regions

$ 29
$ 14.5
$ 2.9
NanoBank Shows Where and When Firms Use Nanotech

1999 Nanotech-using Firms by BEA Economic Regions

Nanotech-using Firms
by BEA Economic Regions

41
20.5
4.1
Social Science Uses of NanoBank

NanoBank data will enable studies of S&T policy, knowledge transfer, and industry formation.

Chuling Chen – Doctoral RA
Center for International Science, Technology & Cultural Policy, UCLA
Expected Impact of NanoBank

- Information will speed commercialization by making it easier for scientists with ideas to link to firms or venture capitalists.
- Scientists can more easily find relevant results across disciplines, advancing science.
- More equal access to information will promote diversity among nanotech scientists, engineers, and entrepreneurs.
Freer Access Promotes Diversity

Alfred E. Osborne, Jr.
Senior Associate Dean
UCLA Anderson School of Management