

Appendix E. NNI Agency Mechanisms for Industry and States

A NILI Survey of Partnership and Funding Opportunities

(See <http://www.nano.gov/html/funding/businessops.html> for updates.)

A main goal of NNI is developing interactions with industry and state organizations in order to support nanotechnology development and technology transfer. The Nanomanufacturing, Industry Liaison, and Innovation (NILI) Working Group surveyed

NNI member agencies to create a central list of the different agency programs that work toward this goal, and to detail the current or planned activities that support this goal of the NILI charter.

Defense Threat Reduction Agency/JPEO Chemical & Biological Defense Program (DTRA/CBDP)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Chem-Bio Detection Capability Area Research	as available	Nano-PCR: Rapid, Accurate, and Portable Full Genomic Amplification (Nanobiosym, Inc.)
CBD/ SBIR Chem-Bio Small Business Innovation Research program	as available (total CBD SBIR FY09 budget = \$12.7M); these funds are for Phase I & Phase II contract awards across the Physical S&T and Medical S&T Capability Areas. Some topic areas have addressed nano-technology applications.	Participation in the annual DOD Beyond Phase II program; this annual outreach conference was established to facilitate one-on-one interactions between small businesses and potential industry partners to commercialize SBIR developed technologies. http://www.beyondphaseii.com

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
CBD/ SBIR Chem-Bio Small Business Innovation Research program	as available	State operated Small Business Development Centers (SBDCs) serve as liaison between SBIR programs (e.g., the Government) and small businesses, and potential industrial partners. The U.S. Small Business Administration (SBA) established the SBDC network to foster relationships with small business and industry. http://www.sbtadc.org/technology/sbirsttr.asp http://www.floridasbdc.com/ http://www.idahosbdc.org/ CBD SBIR has periodically interacted with Florida, North Carolina, Colorado and Montana SBDC organizations.

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Participating at outreach conferences such as the DOD Beyond Phase II conference	N/A	See info presented above

Department of Agriculture, Cooperative State Research, Education, and Extension Service (USDA/CSREES)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Providing competitive grants, including SBIR, formula funds, and Congressional earmarks for research, education and extension activities	Approx. \$6M combined total for nanotechnology, nanomanufacturing is a small fraction of it.	National Research Initiative (NRI) competitive grants, currently funded projects http://cris.csrees.usda.gov/cgi-bin/starfinder/0?path=nrinselink.txt&id=anon&pass=&search=CG=*-35603-*%20not%20PS=TERM*&format=WEBTITLESG

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Facilitating broad stakeholder interactions with Land Grant Universities, other research institutions, the food industry, and agricultural producers through workshops, conferences, grantees' annual meetings, multistate research committees	varies	Nanoscale Science and Engineering for Agriculture and Food Systems – National Planning Workshop, http://www.nseafs.cornell.edu/

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
CRADA- Cooperative Research and Development Agreement		
SBIR- Small Business Innovation Research		http://www.csrees.usda.gov/business/pdfs/sbir_programs.pdf
USDA Extension system/ Extension Communities of Practice (CoP)		http://www.csrees.usda.gov/Extension/
Some large grants with industry direct involvement in project planning, executive, and sharing results, sometimes through an industry board.		
Special research grants aiming at solving industry problems, and may require industry matching fund.		

Department of Labor, Employment and Training Administration, Business (DOL/ETAB)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
High Growth Job Training Initiative	N/A	The High Growth Job Training Initiative is a strategic effort to prepare workers to take advantage of new and increasing job opportunities in high growth, high demand and economically vital sectors of the American economy. The High Growth Initiative targets worker training and career development resources toward helping workers gain the skills they need to build successful careers in these and other growing industries.
Community Based Job Training Grants	N/A	Community Based Job Training Grants serve to build the capacity of community and technical colleges to train workers and develop skills needed in local industries and occupations that are expected to experience high growth. California Nanotechnology Collaborative NanoCenter

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Global Issues in Nanotechnology (GIN) Working Group, NSTC-CT-NSET Subcommittee	None	Participation in GIN meetings Contributions to GIN projects related to OECD activity Connection of NILI and NSET conferences and meetings to DOL-ETAB nanotech talent development investments

Department of State

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
OECD Working Party on Nanotechnology	N/A	Project on Nanotechnology Impacts on Companies and Business Environments http://www.oecd.org/sti/nano
OECD Working Party on Nanotechnology	N/A	Project on Nanotechnology Indicators and Statistics http://www.oecd.org/sti/nano

Food and Drug Administration (FDA)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Meeting with product sponsor	Part of FDA responsibility—no specific budget	For all products that FDA regulates, product sponsors request regular meeting
Public meetings to hear from industry on requirements for nano products	Part of FDA responsibility—no specific budget	Two public meetings to hear from public on requirements for nanoproducts

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Developing guidance for industry for nano products	No specific budget—part of FDA business	FDA Task Force Report

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
While FDA typically does not develop technology for transfer to industry, FDA does serve as a facilitator of technology to bring new technology to enhance public health.	None	N/A

National Institute for Occupational Safety and Health, Centers for Disease Control (NIOSH/ CDC)***Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:***

Title or name of each activity	Amount and budget of annual activity	Example of activity
Facilitating nanotechnology innovation indirectly by reducing safety concern barriers through the NIOSH Nanotechnology program	\$6M in FY08	NIOSH Nanotechnology Program http://www.cdc.gov/niosh/topics/nanotech/ NIOSH Approaches to Safe Nanotechnology http://www.cdc.gov/niosh/topics/nanotech/safenano/ NIOSH Nanotechnology Field Team (NIOSH Publication No. 2008-121: NIOSH Nanotechnology Field Research Effort; http://www.cdc.gov/niosh/docs/2008-121/

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
NIOSH eNews	N/A	http://www.cdc.gov/niosh/enews/default.html
NIOSH Science Blog	N/A	http://www.cdc.gov/niosh/blog/

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Research to Practice (r2p) , a NIOSH initiative focused on the transfer and translation of research findings, technologies, and information into highly effective prevention practices and products which are adopted in the workplace.	N/A	http://www.cdc.gov/niosh/r2p/
CDC Technology Transfer Office		CRADAs, Material Transfer Agreements (MTAs), etc. http://www.cdc.gov/od/ads/techtran/us.htm

National Institutes of Health, National Cancer Institute (NIH/NCI)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
CCNE - Centers of Cancer Nanotechnology Excellence		http://nano.cancer.gov/programs/ccne.asp
CNPP - Cancer Nanotechnology Platform Partnerships		http://nano.cancer.gov/programs/nanotech_platforms.asp
UIP – Unconventional Innovations Program		
SBIR/STTR – Small Business Innovation Research / Small Business Technology Transfer		http://sbir.cancer.gov/
NCL – Nanotechnology Characterization Laboratory		http://ncl.cancer.gov

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Maintaining web site, includes information about Alliance awardees, funding opportunities, scientific bibliography		http://nano.cancer.gov
NCL - Nanotechnology Characterization Laboratory		http://ncl.cancer.gov http://ncl.cancer.gov/working_input-nanomaterials.asp
NanoWeek		

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
SBIR/STTR - Small Business Innovation Research / Small Business Technology Transfer		http://sbir.cancer.gov
UIP - Unconventional Innovations Program		http://ncl.cancer.gov/working_application-process.asp#submission-ncl
NCL - National Characterization Lab		http://ncl.cancer.gov/working_intellectual-property.asp
Public-Private-Partnership		http://ppp.od.nih.gov/pppinfo/focusareas.asp

National Institutes of Health, National Heart, Lung, and Blood Institute (NIH/ NHLBI)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
PEN – NHLBI Programs of Excellence in Nanotechnology		http://www.nhlbi-pen.net/default.php
SBIR/STTR – Small Business Innovation Research / Small Business Technology Transfer		http://www.nhlbi.nih.gov/funding/sbir/index.htm
BRP - Bioengineering Research Partnerships		http://grants.nih.gov/grants/guide/pa-files/PAR-07-352.html

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
PEN – NHLBI Programs of Excellence in Nanotechnology		http://www.nhlbi-pen.net/default.php
NanoWeek		

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
SBIR/STTR - Small Business Innovation Research/ Small Business Technology Transfer program		http://www.nhlbi.nih.gov/funding/sbir/index.htm
BRP - Bioengineering Research Partnerships		http://grants.nih.gov/grants/guide/pa-files/PAR-07-352.html
Public-Private-Partnership		http://ppp.od.nih.gov/pppinfo/focusareas.asp

National Science Foundation (NSF)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
GOALI - Grant Opportunities for Academic Liaison with Industry	Open pool of funds	http://www.nsf.gov/pubs/2010/nsf10580/nsf10580.htm
I/UCRC - Industry/University Cooperative Research Centers	Open pool of funds	http://www.nsf.gov/eng/iip/iucrc/
FRP - Fundamental Research Program for Industry/University Cooperative Research Centers	Open pool of funds	http://www.nsf.gov/funding/
SBIR -Small Business Innovation Research	Open pool of funds	http://www.nsf.gov/eng/iip/sbir/index.jsp
STTR - Small Business Technology Transfer	Open pool of funds	http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5527
PFI – Partnerships for Innovation	Open pool of funds	http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5261
NSEC –Nanoscale Science and Engineering Centers	19 centers	http://www.nsecnetworks.org/
NNN - National Nanomanufacturing Network	Network with 4 main nodes	http://www.internano.org/
NNIN – National Nanotechnology Infrastructure Networks	Network with 14 nodes	http://www.nnin.org/
NCN – Network for Computational Nanotechnology	Network with 7 nodes	http://www.ncn.purdue.edu/
NRI – Nanoelectronics Research Infrastructure	open competition	http://nri.src.org/member/about/default.asp http://nri.src.org/member/centers/nsf-nri/about.asp
MRTC – Materials Research Science & Engineering Centers	17 centers with main focus on nano	http://www.nsf.gov/funding/
STC – Science and Technology Centers, and ERC - Engineering Research Centers	2 centers on nano	http://www.nsf.gov/funding/
NIRT – Nanoscale Interdisciplinary Research Teams –No competition in 2009	Nanomanufacturing area in FY 2011	http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07521
NEB - Nanoelectronics for 2020 and Beyond	Open competition	http://www.nsf.gov/funding/
AIR - Accelerating Innovation Research	Open competition	http://www.nsf.gov/funding/

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Maintaining website with abstracts and funding opportunities, with search engine	about 4,000 awards posted (keyword: nano*)	http://www.nsf.gov/nano http://www.nsf.gov/awardsearch/ http://www.nsf.gov/funding/
Supporting workshops	About 10 per year	Workshop with forestry industry; website or reference TBA

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Publishing papers	N/A	N/A
Patents	N/A	N/A
Funding SBIR/STTR companies	\$18 million (grants)	http://www.nsf.gov/eng/iip/sbir/diversity/2003sbirll.xls
Matching SBIR/STTR companies to industry	\$5 million (supplements)	http://www.nsf.gov/eng/iip/sbir/matchmaker.jsp

United States Forest Service (USFS)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Nanotechnology for the Forest Products Industry- Vision and Technology Roadmap		USFS participated in forest products industry nanotechnology roadmapping workshop. Roadmap published by the Agenda 2020 Technology Alliance. http://www.agenda2020.org/PDF/fp_nanotechnology.pdf
SBIR		SBIR project with NanoDynamics to develop mold-resistant building materials

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
American Forest & Paper Association Agenda 2020 Technology Alliance		Regular interaction and review of pre-commercial nanotechnology for application in the forest products industry
Chemical Industry Vision 2020 Technology Partnership		Regular interaction discussing nanotechnology in the chemical industry. Provide input into chemical industry road mapping activities.
American Forest & Paper Association/Technical Association of the Pulp and Paper Industry Industrial Liaison Meeting		Annual review (2 days) of USFS nanotechnology R&D program with industry
Annual International Conference on Nanotechnology for the Forest Products Industry	\$5,000 sponsorship plus staff time and travel costs to plan , conduct and participate in the conference	Research conference on nanotechnology specific to the forest products sector—involves industry and universities in the US and worldwide
USFS-Purdue University collaboration	\$45,000 plus salary and benefits of employee (~\$90,000)	USFS has placed a nanotechnology scientist at the Purdue University Birck Nanotechnology Center with joint academic appointment.

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
American Forest & Paper Association Agenda 2020 Technology Alliance		Review of pre-commercial nanotechnology and assess readiness for technology deployment
Publishing research in scientific and industry technical journals		
SBIR project - NanoDynamics and other cooperative R&D agreements as opportunities arise		Develop mold resistant building products

National Institute of Standards and Technology (NIST)

Mechanisms to facilitate nanotechnology innovation, nanomanufacturing advancement, and interactions with industry, medical, or other economic sectors:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Center for Nanoscale Science and Technology (CNST) NanoFab Facility		http://www.nist.gov/cnst
NIST / SRC-NRI Partnership		http://www.nist.gov/public_affairs/releases/src.html
TIP - Technology Innovation Program		http://www.nist.gov/tip
NIST Construction Grant Program		http://www.nist.gov/director/ncgp/index.cfm
Measurement, Science, and Engineering Research Grants Program		http://www.nist.gov/director/ocfo/grants/upload/2010_MSE_FFO120809.pdf
Hollings Manufacturing Extension Partnership (MEP)		http://www.nist.gov/mep
SBIR - Small Business Innovation Research		http://tsapps.nist.gov/ts_sbir

Mechanisms to enable transfer of technology to industry:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Publishing Papers		NIST Publications Portal http://www.nist.gov/publication-portal.cfm
Developing Standards		Characterization, Nanometrology, and Nanoscale Measurements Portal http://www.nist.gov/characterization-nanometrology-and-nanoscale-measurements-portal.cfm
Develop Standard Reference Materials (SRM)		Examples: Examples (additional nanoscale RMs will be released in 2010 and 2011): RM 8011, Gold Nanoparticles, Nominal 10 nm Diameter RM 8012, Gold Nanoparticles, Nominal 30 nm Diameter RM 8013, Gold Nanoparticles, Nominal 60 nm Diameter http://www.nist.gov/srm/

Mechanisms to exchange information and stimulate interactions related to nanotechnology with other industry, state, and local organizations:

Title or name of each activity	Amount and budget of annual activity	Example of activity
Sponsor/co-sponsor Nanotechnology-related Workshops	Approx. 3 per year	<p>2008-2010 Examples:</p> <p>Extreme Manufacturing – What are the technology needs for long-term US Manufacturing Competitiveness? http://www.nist.gov/el/extrememanu.cfm</p> <p>The 4th Carbon Nanotube Workshop: Measurement & Control of Chirality http://www.nist.gov/mml/polymers/complex_fluids/carbon-nanotube-workshop.cfm</p> <p>Washington Metro Region Nanotech Partnership Forum http://www.eventbrite.com/event/734215057</p> <p>Grand Challenges for Advanced PV Technologies & Measurements http://www.nist.gov/director/grand_challenges2010.cfm</p> <p>Nano-Optics Plasmonics http://www.nist.gov/cnst/nrg/nopam_conf.cfm</p> <p>Calibration and Standards for Nanomechanical Measurements Workshop http://www.nist.gov/mml/ceramics/calibrations-and-standards.cfm</p> <p>Nanoscale Measurement Challenges for Energy Applications Global Workshop http://www.asmeconferences.org/NanoMeasurement09/index.cfm</p> <p>Enabling Standards for Nanomaterial Characterization http://www.nist.gov/msel/ceramics/nanomaterial-characterization-workshop.cfm</p> <p>The Tri-National Workshop on Standards for Nanotechnology http://www.mel.nist.gov/trinat.htm</p> <p>International Workshop on Documentary Standards for Measurement and Characterization in Nanotechnologies http://www.standardsinfo.net/info/livelihood/fetch/2000/148478/7746082/index.html</p>
Participate in National and International Technical and Standards Committees		<p>Examples:</p> <p>IEEE Nanotechnology Council Standards Committee http://ewh.ieee.org/tc/nanotech/</p> <p>ASTM Committee E56 on Nanotechnology http://www.astm.org/COMMIT/COMMITTEE/E56.htm</p> <p>International Organization for Standardization (ISO) Technical Committee 229 (TC 229) http://www.iso.org/iso/iso_technical_committee?commid=381983</p> <p>International Electrotechnical Commission (IEC) Technical Committee 113 (TC 113) – Nanotechnology standardization for electrical and electronic products and systems http://www.iec.ch/dyn/www/f?p=102:7:0:::FSP_LANG_ID,FSP_ORG_ID:25,1315</p> <p>OECD Working Party on Nanotechnology http://www.oecd.org/document/30/0,3343,en_2649_34269_40047134_1_1_1_1,00.html</p>
Maintain Website with Links to Research Focused on Nanotechnology		<p>NIST Nanotechnology Portal http://www.nist.gov/nanotechnology-portal.cfm</p>