



MATH, SCIENCE & SOCIAL SCIENCE DIVISION

Meeting Minutes

Nanotechnology Technical Advisory Committee

Monday, November 8th, 2010

4:00 – 5:15 PM

MS3 Conference Room (South end of Instruction Building, 2nd floor)

North Seattle Community College

MEMBERS PRESENT

Mark Helsel, Microvision
Chad Goodwin, EnerG2/NSCC
Jeanne Small, University of Washington
Dirk Weiss, University of Washington
Len McNally, Honeywell

Shaun Taylor, University of Washington
Sarah McQuaide, University of Washington
Kathleen Stamm, KMS Designs, LLC
Samra Sangari, Boeing

NSCC MEMBERS PRESENT

Alissa Agnello
Peter Lortz
Brian Rucci

Maureen Devery
Colleen Robertson

I. INTRODUCTIONS (McNally)

- The meeting was called to order at 4:00 PM. Each person introduced themselves and company/college/university they represented.

II. APPROVAL OF MINUTES (McNally)

- Minutes of spring quarter meeting held on June 18th, 2010
- Minutes were approved as written.

III. UPDATES FROM NSCC NANOTECHNOLOGY PROGRAM (Agnello)

- Alissa introduced new format for TAC meeting.
 - Short and concise report-outs.
 - Focus more time on “homework” question topics.
 - Each meeting will have new and different topics.
- Current enrollment for Nano 101 is highest ever – 18 students in the class with an additional waitlist (previous classes had 10-12 students). Very high quality students this quarter.

- Over 10 students set to graduate this year (last year had 4 graduates).
- NSF ATE conference update
 - Alissa, Pete, Mary Ellen, and Maureen attended conference in Washington DC in October 2010.
 - New programs are starting up throughout the country – North Seattle CC (SHINE) is still main program in this part of the country.
 - Pete – Economy has impacted opportunities at the ATE conference (fewer people, fewer workshops). We'll be getting feedback back to NSF ATE about conference.
- Pete – Schools and divisions have been asked to submit budget reduction plans (10% reduction).
 - Nano is a very expensive program compared to other programs.
 - With that said, budget reduction plan should not impact nanotechnology program.
- Jeanne – *Chemical and Engineering News* (Summer Issue): Comprehensive look at all different levels of nanotechnology education in the country. North Seattle CC on the “A” list of Associate Degree Programs.
 - Pete inquired about getting hard copy of this issue.

IV. SHINE UPDATES (Devery)

- Updates on upcoming Fall Nano Lunch
 - Speaker: Michael Laine, LiftPort Group
 - Friday, November 19th, 2010 12:00 to 1:00 pm – Green Room, 1st floor College Center
- Successful Summer Workshop
 - 19 teachers attended workshop (4-community college, 1-middle school, 14-high school) – SHINE has been to five of their 9th grade classes already this year.
 - Target was 25 teachers – discussion on how to make sure teachers that are registered actually attend.
 - Teachers were from all over the state – most of which were from the greater Seattle area.
 - Next year's workshop will be held in Oregon (Salem), following year's workshop will be in Eastern Washington (Kennewick).
 - Evaluators will be sending follow ups in January to the teachers who attended this year's workshop to see if they implemented anything from the workshop into their classrooms.
- Outreach numbers to date:
 - Last year's community programs: 1800 people, 350 of which had formal instruction.
 - So far this year: 154 in classroom, 300 at Pacific Science Center, 200 at elementary school science night.

V. STATE OF THE INDUSTRY (Lortz)

- Colleen Robertson – Embedded Career Services:
 - Helps students one-on-one with interviewing, classroom work, job outlook, industry developments, and internships.
 - Embedded Career Services is a new concept that Seattle Community Colleges are implementing.
- How would you define your field? (Keywords brought up at meeting)
 - Nanopore
 - Composites
 - Nanotechnology
 - Materials
 - Polymers
 - Super-capacitors

- Encapsulation
 - (Solar) PV
 - Chips
 - Integrated
 - Chemicals
 - Spectroscopy
 - Material properties
 - Microstructures
 - Arrays
 - Optical scanner
 - Electronics
 - Photonics
 - LED
 - Biotech
 - Microtech
 - Sensors
 - Energy
 - Implant device
 - MEMS
 - Fiber optics
 - Imagery
 - Biotherapies (targeted)
 - Defense & space
 - R&D
 - Organic electronics
 - Nanodots
 - Nanowires
 - Surface morphologies
 - Molecular engineering
 - NIL
 - Patterned surface
 - EBL
 - Dry etching
 - Patents
- Has your company/industry been affected by changes in the economy? How So?
 - Jeanne – From a small business perspective the market is changing and a lot of companies are on the verge of failure. International sales are still really good.
 - Kathleen – Exciting new healthcare applications:
 - New nanotechnologies may replace traditional EKG.
 - MRX measures the decay of magnetic nanoparticles – used for targeting specific cells.
 - Len (Honeywell) – Defense contracts not as lucrative as in the past. Less R&D funds.
 - Dirk – Worked with former NSCC nanotechnology student Darby McShain.
 - Darby did great work with electron beam lithography and dry etching.
 - Pete asked if Dirk could write up a statement of Darby's profile, and the work he did with him.
 - Chad – EnerG2 doing well, secured DOE funding and will be building a new plant in Oregon.
 - Are there new companies starting up in your field?
 - Dirk will be consulting for a silicon startup company in the bay area.
 - Chad said big companies (Panasonic, Samsung, etc.) are starting to get interested in nanotechnology.
 - Boeing is interested in nanotechnology (lighter materials and conductivity solutions).
 - Are there companies in your field that are leaving WA State? If so, where are they going?
 - Honeywell is closing MEMS factory in Redmond and moving it to Minneapolis.
 - EnerG2 R&D will remain in Washington but plant will be moving to Albany Oregon.
 - Reason for leaving is: higher impact in the community and cheaper unskilled labor.
 - Kathleen said Dendreon a Seattle biotech company is starting a plant in Georgia because they received a \$10 million dollar training grant from the state of Georgia.
 - Micro-stack a MEMS company left the area and went to Texas.

VI. GENERAL QUESTIONS FOR TAC (Lortz)

- Founding opportunities
 - Next Generation Learning Challenge Grant from the Gates Foundation
 - Seattle Community Colleges was invited to apply for several aspects of the Gates grant.
- Washington Technology Center offers free tours of the lab.
 - WTC clean room is probably going to be taken over by the University of Washington on January 1, 2011.
 - Proposal includes: 1) Asking for \$1 million per year from the state to help support the lab. 2) Get experienced lab manager to run the facility. 3) Combine WTC lab with the NTUF lab.

VII. ADJOURNMENT (McNally)

- Meeting was adjourned at 5:15 PM

❖ BELOW ARE EMAIL CORRESPONDENCE FROM DAN GRAHAM AND KATHLEEN STAMM TO ALISSA AGNELLO OF QUESTIONS ASKED IN AGENDA V.:

I have answered the questions below based on my work here at the UW.

* How would you define your field? (Nanotech? Microtech? MEMS? Energy? Biotech? Photonics?....)

In our lab we specialize in surface analysis of a wide range of materials. We have instrumentation that can address a wide range of size scales from nano through micro.

* Has your company/industry been affected by changes in the economy? How so?

-The state legislature continues to cut funding to education. This has impacted the UW in many ways (no raises, difficulty in attracting good candidates for departments, etc).

-Also the grant process has become even more competitive with more people going for the same money than before.

* Are there new companies starting up in your field?

None that I know of.

* Are there companies in your field that are leaving WA state? If so, where are they going?

None that I know of.

Dan

These were thought-provoking questions. I am still waiting to hear back from a former Immunex colleague at Dendreon (he is chief scientific officer) and from a contact at the WBBA (Washington Biotechnology and Biomedical Association). Meanwhile, I have gathered these facts:

Dendreon has plants in three other states: California, Georgia, and New Jersey. They are gearing up in Georgia in part because Georgia awarded a \$10 million training grant for workers hired there.

In recent comments, Representative Jay Inslee referred to our state's competition for biotech jobs as a "knife fight." Meanwhile, the Governor's budget cut 40% from the Life Sciences Discovery Fund. Speakers at WBBA's annual meeting expressed grave concern about the downside effects of a state income tax.

Dendreon's CEO Mitch Gold (speaking at the WBBA meeting) talked about how important it is to inspire and educate students about careers in science (one more voice echoing the importance of NSCC's nano-based outreach programs).

Gold also emphasized the importance of the "cluster effect" in recruiting and retaining talent. On the negative side, he observed that recruitment at Dendreon was tougher after the buy-out of Immunex by Amgen in 2002. On the plus side, he cited a recent, successful executive recruitment at Dendreon (COO position) based in part on the presence in Seattle of the Gates Foundation, which was a draw for his spouse, who eventually went to work there.

As you know, healthcare implications and applications of new technology are my area of interest and expertise. In recent months, Washington's healthcare startups continue to attract the most financing by venture capital firms, followed by internet, software and computer hardware/services. In general, I know there are nano and bio aspects of many such start-ups. Two nano technologies with healthcare applications about which I recently learned are an atom-based minisensor packaged with fiberoptics that may replace the traditional EKG and magnetorelaxometry (MRX) which measures the decay of magnetic nanoparticles. MRX is used to localize, quantify and image magnetic nanoparticles inserted into biological tissue for such medical applications as targeted drug delivery.

I hope some of these points will be helpful to our discussion on Monday, Alissa. I look forward to seeing you there.

Kathleen