

Information on Nanotechnology Provided by Active Academic Institutions

As Nanotechnology is making its way into science and industry as “The Next Big Thing”, it is important for those who will be impacted by the advanced technology, to be informed adequately. This is important because in mankind's past history, technology has always revolutionized society and even entire civilizations. From the invention of the wheel to the invention of the car; from the invention of the abacus to the invention of the computer, it's all changed the way a man thinks and lives. Therefore it is our goal as members of the IPRO 341 team to bring information on Nanotechnology in its various areas of study to the public while keeping an unbiased opinion. This is important because we found a significant need for the general public to be able to research Nanotechnology and formulate their own opinion rather than someone else doing it for them. This report is a brief overall study of two Academic websites that are actively involved in Nanotechnology. Furthermore, instead of researching two different academic institutions, I chose to research one institution. This is because this institution, the Massachusetts Institute of Technology, has a few different Nano-based organizations. I chose to research and provide information on two of the organizations based on the questions chosen by our team. MIT has the Institute for Soldier Nanotechnologies (<http://web.mit.edu/isn/index.html>) and the Space Nanotechnology Laboratory (<http://snl.mit.edu/index.html>).

Institute for Soldier Nanotechnologies

This institute was found in March 2002 through a five year \$50 million contract with the U.S. Army Research Office (ARO). It is pretty apparent right away from there homepage that the portrayal of their information is provided in a positive manner. Their mission is to dramatically improve the survival of a soldier's life through better protection, mobility, and agility. The research is soldier motivated and there is a bias such that the institute works with the army so its scientific work is influenced by the ethics and philosophy of the U.S. army. This bias is not hidden and is not necessarily negative because the institute is funded primarily through the army itself. An example of the bias is that through all this research and technology development, the soldier will be a less vulnerable, stronger moving force in the infantry. They don't mention that increasing soldier power will obviously change infantry warfare as well. Perhaps this is because infantry soldiers today have to walk around with somewhere between 100-140lbs. on their back just to have barely sufficient equipment. The goal of the institute's research is that nanotechnology will allow for miniaturization of materials such as armor, fabrics, and weapons.

The institute has been running successfully with new breakthroughs as often as every other week. The contract was initially for five years but based on the efforts and accomplishments made thus far, it will be extended. The information is provided in an excellent organized manner within the website. The categories are briefly explained within a certain page. If one wishes to further read into a category, they can click on the topic and find its detailed information in an exclusive page. There is also a 12 minute video in the "About ISN" page. It offers an excellent in depth look at the current research

and then also shows a computer animated representation of future possible uses for a soldier.

There is a great section that offers news and research related articles in the “News/Events” section. The website allows itself to appeal to the general public by offering a great overview of its work as well as offering possible investors information for contact and partnership.

The general stakeholder is the apparent investor, the U.S. ARO but also the associated industrial partners. The institute also has a partnership with private industry that is key to manufacturing and commercializing the technology developed within. Some of the major players are Raytheon, DuPont, and Partners Healthcare.

Navigation within the page is easy. As far as accessibility is concerned, one can go to MIT’s main page and simply search nanotechnology. The ISN will be one of the first links to appear. Therefore, the general public can get to the page with minimal effort. The website is very helpful in terms of information and contacts. They even explain how their research teams are organized into different areas of study and which teams work together for various projects. However, the information that cannot be obtained through the ISN website is how much money is funded to the organization through private industry.

Space Nanotechnology Laboratory

This organization was established in July 1993 through NASA and MIT funds. Again, the information provided by the website is from the positive aspect of nanotechnology. There are no doomsday theories found here either. Their mission

statement is “...to develop nano-fabrication, advanced lithography and precision engineering technology for building high performance space instrumentation, including x-ray telescopes and high resolution x-ray spectrometers, magnetospheric imagers and solar physics instrumentation...Education and training of students is an important part of our mission...” This shows that their main goal is to build nano-fabricated tools for space research. They are geared towards primarily research and working in areas that would benefit stakeholders such as NASA. There seems to be little room for bias in this website since they are strictly sharing information on their projects, research and development. They offer more information in terms of data rather than opinion. This is a great place for one who would like to see an area of study that is benefited from nanotechnology.

The website is accessible to the general public and anyone who wishes to learn areas of applications using nanotechnology. Once again, one can simply find this website through MIT’s home search bar.

There is a “History” section which has a history timeline that provides important progress made by the laboratory. The SNL was opened in 1994 and has been actively working through November 2003. However, currently the website states that it was last updated in 2003. Therefore, it is difficult to know if the laboratory is still active without contacting members listed in the “Contacts” section. There is no information provided in terms of recent activity. In an overall sense, the information that is presented is organized fairly well. The website seems a bit generic in comparison to that of the ISN website which might raise some doubts among some of its visitors in terms of its credibility, especially since it has not been updated since 2003. There is a good amount

of research provided to the site viewer from their past and current projects. There is also a gallery page which has pictures from projects and nano-scale materials.

The following are listed investors of the laboratory:

- National Aeronautics and Space Association (NASA)
- NASA Goddard Space Flight Center (GSFC)
- Defense Advanced Research Projects Administration (DARPA)
- NASA Institute for Advanced Concepts (NIAC)
- Los Alamos National Laboratory (LANL)
- Southwest Research Institute (SwRI)
- National Science Foundation (NSF)

This shows that its affiliations are with all scientific research institutions. There are no listed partnerships with private investors or industries.

Overall, this website's intended audience is for people who know a little bit about nanotechnology and have more of a scientific and/or engineering background. The site offers great information on those who are seeking research positions whether they are students, professor of science, or engineers.

Conclusion

From reviewing the two different MIT organizations, I noticed that the information was provided in a positive manner. This occurs naturally as expected because these were both research institutions. Both the ISN and the SNL are working with belief that nanotechnology is important. Their opinion might be considered biased since they are being funded by government organizations. However, both wish to research and develop better products through the use of nanotechnology.

References

Space Nanotechnology Laboratory, MIT

<http://snl.mit.edu/index.html>

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