Lecture-15. Useful links about nanotechnology

UnderstandingNano

Yes, UnderstandingNano is our site, so we're a bit prejudiced. However, the growing traffic to our site over the last few years, and the interest it has gen erated, especially among educators and students, makes us think it's worth your while to pay us a visit. Plus, we regularly post updated information to supplement this book and keep your nano knowledge current. Here's what we consider the strengths of our site:

perhaps the best collection of information on nanotechnology applica tions: We explore how nanotechnology is being used across a wide range of applications, including healthcare, manufacturing, energy, and the environment (see Figure 15-1).

Nanotechnology lesson plans for middle school and high school students: These plans provide great tools for educators to help students learn about the basics of nanotechnology, as well as how nano is being used in medicine and to help our environment. Each lesson plan includes a student handout, reading assignments, discussion topics, and suggested projects.

Directory of nanotechnology companies: We think this list is easy to use because we've divided it into categories such as Air Quality and Electronics to help you find the right company for your needs. Click a company to go to its site.

A listing of nanotechnology degree programs: This list helps those considering a career in nanotechnology to find the right school for their studies.

Nanowerk

The interesting Nanowerk web site touts itself as the premier nanotechnology portal. The site is a collection of information about nanotechnology, ranging from news items to career listings and some informative introductory information for those new to the topic. Here are the things we like best about the site:

The best nanomaterials database we've found: This is a useful, exten sive, and easy-to-navigate system for finding providers of different kinds of nanomaterials. The results (see Figure 15-2) often give specifics about the size or purity of materials.

Excellent "Spotlight" articles: These articles provide a detailed review of recent nanotechnology developments. Most articles are written in collaboration with authors of scientific papers, so the content is usually well grounded in scientific know-how.

A thorough collection of nanotechnology news stories: This site tends to include just about every piece of news on nanotechnology, so you may have to troll through to find the most current and interesting items.

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Nanotechnology degree program directory: The programs are divided into Bachelor/Master/PhD/Other, and you can view the results by country or alphabetically.

NanoZone

The NanoZone site is for the kid in all of us. It provides well-prepared introductory materials on nanotechnology for students in the 8- to 14-year-old range. In addition, some sections provide information for museum profes sionals and teachers.

Short podcasts highlight what is special about nanotechnology (click Why, and then click Talk to a Scientist to find them).

Videos (for example, under How Small Is It?, What Is a SEM?) allow you to see things at the nanoscale and hear how people are working with nanosized materials. You can also find images sprinkled around the site of various materials viewed using a scanning electron microscope.

Ads of the future (under Why Is It Important, click FUTURENANO) are not only fun to look at but also tell you when certain products might be available and what makes them nanoproducts. This feature is shown in Figure 15-3.

NanoStat cards for various scientists (click Who Works On It) show you the background of various people who became nanotechnologists. This section provides a good way for those interested in nanotechnology to understand the kind of studies and pursuits that might lead them to success in the nanotechnology field.

The big drawback to the site is that it was last updated in 2006 and seems to be a project that has ended, so beware any dated material. But as a fun site on nano basics, it should be useful to many.

National Cancer Institute Alliance for Nanotechnology in Cancer

The National Cancer Institute Alliance for Nanotechnology in Cancer is a prime example of a government funding university-based research centers. These centers develop techniques that result in startup companies work ing to commercialize products. Some of those results include an antican cer drug that causes cancer cells to kill themselves off and unique ways of using nano for imaging to detect some forms of cancer. To see a longer list of examples of these projects, look under Alliance in Action and view their Accomplishments. Watching their video titled "Journey into Nanotechnology" is one way to understand how confident this alliance is that their work will help prevent cancer. They also offer some introductory material to help you better under stand what nanotechnology is; it features some very nice illustrations of things such as nanoshells and nanowires (see Figure 15-4). Their Tools for Education section is also a great resource for videos and images to help people of all ages learn about nano and its use in detecting or curing cancer. You can also find news about the latest advances in nanotechnology cancer treatments on their News and Highlights page.

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Foresight Institute

Foresight Institute is a self-professed "think tank and public interest organiza tion" that offers a series of roadmaps to move forward in molecular manu facturing as well as educational content and advocacy for the ethical use of nanotechnology products and techniques. Here are some of the highlights of this site:

In one of the most extensive nanomedicine image galleries available, you can find images of a wide range of nanorobots and other medical-related nanomachines (see Figure 15-5).

The Why Should You Care? link takes you to an interesting group of essays by scientists, including nanotechnology luminaries Drexler and Freitas, who comment on why you should care about nanotechnology.

A group works with others to attempt to standardize terminology, forms of measurement, health and safety standards, and the way that materials are specified.

The Open Source Sensing Initiative is an intriguing attempt to balance the need to use nanotechnology-based sensors to collect health and other data with the need to respect individual privacy