Testimony of

Sean Murdock

Executive Director

NanoBusiness Alliance

U.S. House Committee on Science and Technology

Hearing on

The National Nanotechnology Initiative Amendments Act of 2008

April 16, 2008

Chairman Gordon, Ranking Member Hall, and Members of the House Committee on Science and Technology, I would like to thank you for the opportunity to testify on the National Nanotechnology Initiative Amendments Act of 2008.

My name is Sean Murdock, and I am the Executive Director of the NanoBusiness Alliance. The NanoBusiness Alliance is the nanotechnology industry association and the premier nanotechnology policy and commercialization advocacy group in the United States.

NanoBusiness Alliance members span multiple stakeholder groups and traditional industrial sectors, including newly formed start-ups, Fortune 500 companies, academic research institutions, and public-private partnerships working to derive economic development and growth through nanotechnology.

This wide group of stakeholders has come together because we believe that nanotechnology will be one of the key drivers of quality-of-life improvements, economic growth and business success in the 21st century. The Alliance provides a collective voice and a vehicle for efforts to advance the benefits of nanotechnology across our economy and society.

The NanoBusiness Alliance strongly supports the National Nanotechnology Initiative Amendments Act of 2008 as drafted.

The Need for this Legislation

This Committee has long recognized that nanotechnology is one of the most important frontiers of science and technology, and that nanotechnology has the potential to dramatically improve our quality of life, our health, our environment, and our economy. The National Nanotechnology Initiative, which this Committee led Congress in authorizing in 2003, provided the framework for coordinated federal research and development. That authorization bill, the 21st Century Nanotechnology Research and Development Act, focused on fundamental nanotechnology research.

Now, five years later, it is time to reauthorize and update this legislation. Much has changed in the past half-decade; nanotechnology is beginning to move from the laboratory to the store shelf.

American nanotechnology companies are beginning to shift from prototype development to large-scale manufacturing. Employers are beginning to look for a nanotechnology-qualified workforce. And the public is beginning to notice nanotechnology, with its many benefits – and some potential risks, which need to be examined and managed.

That the nanotechnology landscape has changed so much in five years is in no small part due to the success of the National Nanotechnology Initiative. But its success at jump-starting the nation's nanotechnology economy means that the Initiative now needs to be updated to reflect five years of growth.

We are pleased that the Committee has thought carefully about how best to bring the National Nanotechnology Initiative up to date. The draft legislation will improve the Initiative's capabilities in several key areas, including translational research and commercialization; nanotechnology education; and environmental, health, and safety research.

Translational Research and Commercialization

As the Members of this Committee know, America faces intense global competition in every field. But nowhere is this competition more intense than in the field of nanotechnology. Nanotechnology's economic potential has led countries across Europe and Asia to make large strategic investments in nanotechnology research and development. The stated goal of many of these countries is to dominate one or more sectors of the nanotechnology economy. Russia has announced a $7 billion nanotechnology initiative that will spend nearly $750 million more on nanotechnology research each year than the United States will. China already is on par with the United States, when purchasing power is taken into account.

The United States continues to lead the world in fundamental nanotechnology research, but over the last five years we have seen our foreign competitors demonstrate that they are becoming equally capable of commercializing nanotechnology. By leveraging our research, these foreign governments and foreign companies are skipping the hard work and reaping the economic benefits.

We must reverse this trend. While we cannot and should not adopt our competitors' model of direct state investment in private companies, we can and should take steps to ensure that innovative American companies have unfettered access to American research, and that they are able to commercialize that research efficiently and effectively. We should encourage programs such as Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR), and the Technology Innovation Program (TIP). We should focus our efforts on goal-oriented research in areas of national importance. And we should do everything we can to see that federal, state, and private resources are working together toward the goal of bringing as much nanotechnology to market in the United States as possible.

The draft legislation does all of this. It retools the National Nanotechnology Initiative to focus more on goal oriented research, while maintaining a commitment to fundamental research. It gives the SBIR, STTR, and TIP programs a leading role. It supports large-scale collaborative efforts to develop nanotechnology solutions to key public policy challenges such as energy

efficiency, environmental cleanup, and health care. And it updates the Initiative to include databases and other information-sharing mechanisms to help companies and researchers understand what resources are available.

Nanotechnology Education

The NanoBusiness Alliance is firmly committed to advancing nanotechnology education. We cannot expect to compete in the global economy if we are not generating nanotechnology-literate students who will go on to become leaders and workers in the nanotechnology economy. We need to inspire American students to choose science tracks in high school, and then provide them with hands-on nanotechnology opportunities in colleges and technical colleges.

As it stands, we are educating foreign students, and then sending them home to compete against us. According to the NSF, foreign students on temporary visas earned 32 percent of all science and engineering doctorates awarded in the United States in 2003, the last year for which data is available. Foreign students earned 55 percent of engineering doctorates. Many of these students expressed an intent to return to their country of origin after completing their studies.

The Alliance strongly supported the Nanotechnology in the Schools Act, and we are pleased to see that the current legislation reflects the goals of that bill. In particular, the Alliance supports putting nanotechnology tools in the hands of students, so that they can see firsthand what nanotechnology is and why it is important (and exciting). The Alliance also supports integrating local nanotechnology businesses into the program; many of our members are already reaching out to schools in their areas to help introduce students to nanotechnology.

Environmental, Health, and Safety Research

Nanotechnology has tremendous potential benefits for the environment, health, and safety (EHS). But as we develop nanotechnology applications, we must do so responsibly – identifying and addressing any risks or hazards associated with nanotechnology before they cause environmental, health, or safety problems. The Alliance has called for the National Nanotechnology Initiative to include a comprehensive, fully funded environmental, health, and safety research program, and this legislation does just that. We strongly support this EHS research.

Americans need to know that the products they use are safe, or else they will not purchase or use them and the market for those products will collapse. The way to reassure consumers is not by ignoring any problems but by finding and dealing with any problems that may exist. A clear understanding of the environmental, health, and safety impacts of various kinds of nanoparticles is necessary, and that understanding must expand as new nanoparticles are developed.

The NanoBusiness Alliance believes that environmental, health, and safety research should be fully funded and based on a clear, carefully-constructed research strategy. While we believe that 10 percent of the total funding for nanotechnology research and development is a reasonable estimate of the resources that will be required to execute the strategic plan, we also believe that

actual resource levels should be driven by the strategic plan as they will vary significantly across agencies.

The Alliance appreciates the Committee's commitment to developing a broader understanding of nanotechnology before erecting an extensive new regulatory structure. We hope that Congress will see the wisdom of the Committee's approach, and will use the research authorized by this bill as a basis for the decision of what, if any, new regulation is needed.

Conclusion

I would like to thank the Committee once again for the invitation to testify today, and for its leadership in working to ensure that America maintains its nanotechnology preeminence in the midst of intense global competition. The NanoBusiness Alliance commends this Committee and its staff for the careful research and extensive collaboration that have led to this proposed legislation. We strongly support the National Nanotechnology Initiative Amendments Act of 2008 as drafted.