



## **Nanotechnology Authority Advisory Committee Final Report**

### **Introduction**

The 2007 Nanotechnology Authority Advisory Committee, under the leadership of Delegate Purkey and Delegate Plum, focused on potential mechanisms to advance nanotechnology in the Commonwealth by building upon the results and recommendations of the 2006 Nanotechnology Manufacturing and Nanotechnology Research and Development Committees. Specifically, the Nanotechnology Authority Advisory Committee was organized to develop the justification and components of an independent authority to promote, finance, and develop the nanotechnology industry in the Commonwealth.

### **Legislative Members:**

Delegate Harry Purkey, Chairman  
Delegate Joe May  
Delegate Ken Plum  
Senator Janet Howell

### **Other Members**

Steve Danziger, BAE Systems  
Lisa Friedersdorf, University of Virginia  
Charles B. Gause, Luna Nanoworks  
Charles Gleason, Liberty Ventures  
Richard Gregory, Old Dominion University  
Robert Hull, University of Virginia  
James Kadtko, Accelerating Innovation Foundation  
Donald Leo, Virginia Tech  
Terry Leslie, Micron Technology  
J. Glynn Loope, NanoChemonics  
Dennis Manos, College of William & Mary  
Robert Mattauch, Virginia Commonwealth University  
Duncan McIver, Technology Commercialization Center  
Kathleen Meehan, Virginia Tech  
Mark Shuart, NASA Langley Research Center  
Nancy Vorona, Center for Innovative Technology

## **Summary**

The Nanotechnology Authority Advisory Committee met four times during the 2007 Interim to justify and create an independent nanotechnology authority. However, in light of the current budget realities, the advisory committee chose to not recommend legislation establishing an independent nanotechnology authority during the 2008 Session of the General Assembly. Therefore considerable effort was focused on private investment resources and potential tax incentives to encourage support of early stage nanotechnology businesses in Virginia.

As a case study, the director of the BioEnterprise Initiative in Cleveland gave a presentation regarding the formation and results of a public/private enterprise using a market-back catalyst and funding connector approach. In five years, this initiative accelerated 60 companies, resulted in more than \$525 million in new growth funding raised by companies, and completed over 160 deals collecting more than \$65 million in licensing revenues. The advisory committee maintains that an independent, nanotechnology based, enterprise with both public and private support would provide the greatest benefits to the Commonwealth's nanotechnology industry.

The recently released report, "Investing in Innovation" by the National Governors Association (NGA) and the Pew Center on the States was a useful tool in discussing strategic innovation investments and the way in which to measure the success of these investments. This report developed six guidelines for R&D Investments and presented case studies to serve as a guide to governors, CEOs, legislators, fund managers, and other stakeholders and decision makers. Critical to success were several items discussed and recommended by the JCOTS nanotechnology advisory committee over past few years. These include development of statewide research and innovation strategies; alignment of resources to provide advantages to in-state businesses; focused and sustained investment in key areas where a state can be world class; collaboration between university, industry and government entities; creation of an organization to facilitate and oversee partnering and spending; and finally, measurement of success to hold recipients of public investment accountable.

Based on the results of the NGA report it appears that several of the more successful states have first focused on establishing a well funded and adequately staffed research, development, and commercialization organization. Leading states establish many of these organizations with a large investment of state dollars and the expectation that federal and private sources become the dominant funding stream after a defined period of time. Once operating efficiently, many of the leading states develop additional organizations that target very specific sectors of the technology industry, such as nanotechnology. As previously stated, it is a targeted nanotechnology specific organization that will provide the most effective support to Virginia's nanotechnology industry.

To ensure alignment with other Virginia efforts in research and development strategic planning the subcommittee requested the co-chairs of the Virginia Research and

Technology Advisory Commission (VRTAC) Research and Development subcommittee to present during the September 25<sup>th</sup> meeting. The VRTAC R&D subcommittee, building upon the report released in spring 2007 entitled “Collaborative Research and Development Strategies and Directions for the Commonwealth of Virginia,” was focused on potential public/private capital sources and key metrics for determining the success of investments. The VRTAC subcommittee also reviewed the “Investing in Innovations” report of the NGA. The findings and vision of the VRTAC committee with recommendations for collaborative research and development programs are consistent with the work of the JCOTS nanotechnology committees. Nanotechnology plays a critical role in the three research priorities identified in the VRTAC University and Federal Laboratory report released in March, as illustrated in the whitepaper document “*Nanotechnology in Energy, Electronics, and Medicine.*”

The committee was also active in outreach activities to promote and educate Virginia on the excitement and economic potential of nanotechnology. A key event was Virginia Nanotechnology Day on January 24, 2007, hosted by Delegate Purkey, which was held in Richmond in the General Assembly Building. The work of this committee was also discussed at the National Institute of Aerospace (NIA) event, “Developing Advanced Materials in Virginia – Impact of Nanotechnology” on February 22, 2007, and with a presentation summarizing highlights of recent JCOTS and VRTAC reports, including nanotechnology, at the NIA Celebration Event on September 26, 2007.

The committee endorses the continued commitment of the Commonwealth in facilitating university, industry, and federal collaborations. One important university organization identified by the committee is the Academic Licensing Community of Virginia (ALCOVE) which provides resources to Virginia university research administrators who are charged with the protection of intellectual property developed at their institutions and the transfer of technology to the commercial sector.

### **Final Recommendations**

The result of the 2007 Nanotechnology Authority Advisory Committee’s meetings, discussions, and evaluations is that the committee recommends JCOTS:

1. Sponsor a “Nanotechnology Day” during the 2008 Session to showcase the nanotechnology activity from across the Commonwealth. The 2007 event was met with overwhelming enthusiasm with requests to repeat and expand in future years.
2. Support the introduction of legislation for a nanotechnology focused equity and subordinated debt investments tax credit.

A copy of the draft legislation accompanies the materials for the 12/10/07 meeting of the Joint Commission on Technology and Science. Along with these recommendations, the 2007 JCOTS Nanotechnology Authority Advisory Committee has also developed a white paper illustrating the role of nanotechnology in the key research areas identified by VRTAC: energy and the environment, future microelectronics, and lifespan biology and

medicine. In summary, the committee feels that the proactive implementation of these recommendations by the General Assembly would begin to create the infrastructure in the Commonwealth needed to meet our overarching vision which is to:

*“Position Virginia at the forefront of nanotechnology from research to manufacturing for economic growth and creation of high technology jobs.”*