



**Nanotechnology Manufacturing and Research and Development  
Advisory Committees  
July 26, 2006 10:00 a.m.  
House Room D, General Assembly Building**

- **Call to order, roll call:** Roll call, chairman's welcome, introduction of legislative and citizen members of the advisory committee.

Delegate Purkey served as chair and welcomed the advisory committee.

- **Overview of the role of JCOTS advisory committees:** JCOTS staff will provide an overview of the role of JCOTS and its advisory committees, the advisory committee process, and other administrative matters.

Staff Attorney Patrick Cushing briefed the advisory committee on JCOTS and other procedural issues.

- **Overview of science and technology appropriations in the 2006-2008 Budget:** JCOTS staff will highlight specific appropriations related to research and economic development in the technology sector.

Delegate Purkey began the discussion by stating: "If you fund it, it will come."

Patrick Cushing informed Del. Purkey that over \$398 million in general and nongeneral funds would go to technology and science over the 2006-2008 biennium. Patrick also reviewed the Higher Education Research Initiative which was funded at \$205 million in state, federal, and private support.

The only reference to nanotechnology in the budget was an appropriation of \$45 million to Virginia Tech for expanded research in nanotechnology and biotechnology research. Kathleen Meehan of Virginia Tech described two proposals for the budgeted funds: a pathogen-environmental initiative in bioengineering, and an advanced biomaterials and nano-programming

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merger between VT's College of Science and College of Engineering. Dr. Meehan will bring more information for the advisory committee's next meeting.

The advisory committee collectively voiced concern over \$3 million allocated to a "research-related facility" along I-81. Patrick explained that the money was to be used by the Governor to attract a research related entity to the I-81 corridor.

Delegate Purkey also pointed out some budget amendments which did not make it into the final budget but were further examples of the Commonwealth's commitment to science and technology research and related industries. Delegate Purkey cited job growth as the number one reason to support the high-tech industry in the Commonwealth.

Terrence C. Leslie, Micron Technology, Inc., asked for the Committee's opinion on why the biotechnology sector received such large support. Del. Purkey noted that the biotechnology sector is more mature and better organized both in Virginia and nationally. Dr. Robert Hull, UVA Dept. of Material Sciences, requested that the advisory committee focus on developing a sound nanotechnology policy, as opposed to revisiting past issues such as education and intellectual property policies. All members of the advisory committee voiced support for focusing on more state involvement in the nanotechnology industry in Virginia. Steve Danziger of BAE Systems mentioned that the state should be ready to take action as new opportunities in the nanotechnology industry develop in Virginia.

- **Overview and history of the Nanotechnology Advisory Committee:** JCOTS staff will give a brief history of the Nanotechnology Advisory Committee and review potential areas of study for the 2006 interim.

Building from the previous discussion, Patrick Cushing reviewed the history of JCOTS and the Nanotechnology Advisory Committee. In 2004 and 2005 the advisory committee identified several tangential issues that would help spur the nanotechnology industry: streamlined intellectual property policies at state universities and access to an educated workforce. During the 2006 Session both HB 134 (streamlined IP policies) and HJR 25 (study on STEM education in all VA public schools) were enacted to address these concerns.

- **Discussion & formulation of work plan:** This is an opportunity for a "round table" discussion by the members of the advisory committee. Members may use this

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opportunity to state issues that they would like to see addressed by the group during its study, as well as formulate a work plan for future meetings.

The advisory committee discussed the possibility of producing a white paper for the 140 legislative members of the General Assembly. The purpose of the paper would be to explain how the nanotechnology industry and research and development at universities would benefit Virginia's economy in the future. The committee noted that most legislative members do not understand what nanotechnology means and where the industry is headed. The goal of the white paper is to provide legislative members an easy to read and easy to understand document that can be used to help direct funding proposals in the future. Delegate Purkey appointed the following workgroup to develop a draft whitepaper to present to the full advisory committee at its next meeting:

- Dr. Lisa Freidersdorf (Leader)
- Dr. James Kadtko
- Dr. Richard Gregory
- Dr. Robert Hull
- Steve Danziger
- Terrence Leslie

John B. Noftsinger, Jr., Associate Vice-President of Academic Affairs for Research at JMU, expressed his hope the white paper could encapsulate a realistic view of the product of legislative action and state investment.

Delegate Purkey suggested that JCOTS host a Technology or Nanotechnology Day during the 2007 session in conjunction with the release of the white paper. Del. Purkey asked for Patrick's guidance in developing the event early next session to build support for state involvement in the nanotechnology industry.

The Committee entertained open discussion to help develop a potential framework for the whitepaper.

Initiated by John Curtin and Lisa Friedersdorf, the advisory committee briefly discussed the possibility of establishing a center for nanotechnology development in Virginia. Dr. Friedersdorf mentioned that George Mason was already developing an academic program for nanotechnology and they might be a good foundation for a nano-cluster. Dr. Manos, William and Mary, agreed that

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it would be wise to think about establishing a nano-cluster in a specific sector of the industry. Dr. Manos also proposed focusing on near term (3-5 years) commercial opportunities.

J. Glynn Loope suggested the paper include a preamble on viability of nanotechnology in the private sector as it stands in Virginia today with discussions on how the policy in Virginia would relate to the federal policy. Mr. Loope also thought it would be helpful for the Virginia Economic Development Partnership (VEDP) to give a brief summary on the viability of the nanotechnology industry in Virginia.

Charles A. Gleason, CEO of Liberty Ventures Intl., asked the advisory committee to consider how to best integrate private financing and public financing while encouraging the commercialization of nanotechnology developments. One idea the advisory committee discussed was the need venture capital, SBIR funding, and angel investing to incubate commercial start-ups and assist with product development. Mr. Gleason also stressed the importance of attracting great minds in nanotechnology to the Commonwealth (recruiting talent). The advisory committee briefly discussed the possibility of drafting a second whitepaper on nanotechnology education and recruiting an elite workforce. The original whitepaper will contain some of this discussion and no further plans were made for this whitepaper.

Dr. Kadtke, Accelerating Innovation Foundation, gave a presentation on innovation in Virginia and the efforts of the Accelerating Innovation Foundation. He stressed that underinvestment makes commercialization impossible, and cited countries with some of the highest levels of public investment, such as South Korea, Japan, and Scandinavia, as industry leaders.

Dr. Kadtke proposed filling the policy gap by translating national recommendations to initiatives in communities, localities, and small businesses. He noted that it will take participation from all levels of government and industry to grow a healthy and sustainable nanotechnology industry in the Commonwealth.

- **Public comment:** Members of the public be given the opportunity to express their views about the advisory committee and its work.

In a second presentation Egils Milbergs from the Accelerating Innovation Foundation insisted that incremental improvements and a linear approach to development would not help the Virginia economy. He showed the advisory committee a number of helpful diagrams illustrating the need



for a dynamic ecosystem through which research, development, and commercialization would occur collaboratively.

- **Actions for next meeting:** The chairman may wish to direct staff and members of the advisory committee to follow up on particular items for the next meeting of the group.

Delegate Purkey and others expressed their thanks to the presenters. The meeting adjourned after the members agreed with Lisa Friedersdorf that input on the white paper draft would be better received and their goals best accomplished if the Manufacturing and Research & Development Advisory Committees again met jointly at the next meeting.

### Summary of Assignments for Next Meeting

1. The next meeting will likely be in October, giving the whitepaper workgroup time to compile an outline and first draft.
2. The whitepaper workgroup will present an outline and first draft for both advisory committees to review. Ideally this draft will be sent to the entire group in time to allow all members to prepare comments for discussion at the meeting.
3. Patrick will prepare and present a recommendation for hosting a Nanotechnology Day during session. The recommendation must be presented to the full JCOTS membership at its next meeting.
4. Further presentations and assignments may be presented at the next meeting at the request of the whitepaper workgroup.