

July 8, 2004

MEMORANDUM

To: Mr. Dalton B. Floyd, Jr., Chairman, and Members, Commission on Higher Education

From: Dr. Vermelle J. Johnson, Chair, and Members, Committee on Academic Affairs and Licensing

Informational Report
South Carolina Research Centers of Economic Excellence

During the 2002 legislative session, the South Carolina General Assembly passed the *South Carolina Research Centers of Economic Excellence Act*. With an annual allocation of \$30 million in lottery funds, to be matched on a dollar-for-dollar basis with non-state funds, this competitive grants program was established to provide South Carolina's three research universities with funds for endowed professorships in areas that will enhance economic opportunities for the state's citizens.

The program's goal is to create a critical mass of senior researchers around whom a Research Center of Economic Excellence (sometimes referred to as the "Endowed Chairs" program) can be built. The Centers will recruit senior faculty, as well as junior faculty and graduate students, and establish public/private partnerships with business and industry. Through research and its eventual application, it is anticipated that job creation and other economic stimuli (e.g., patents, licenses, etc.) will follow.

During the last six months CHE staff have administered the 2003-04 grant cycle, which has included identifying external reviewers and submitting each of this year's twenty proposals to a minimum of three electronic reviews. The electronic review process was completed in February, 2004, and the results of that process were submitted to the Review Board during their February 24, 2004 meeting. At that time, the Board reduced the number of proposals to be considered for funding from twenty to thirteen.

On March 28 – April 1, 2004 a team of consultants gathered to review the remaining thirteen proposals. They visited the campuses of South Carolina's research

universities (Clemson, MUSC, and USC-Columbia) and attended presentations delivered by the Principal Investigator for each Endowed Chair research proposal. The team of seven experts included three returning members from the prior year's round of funding, and four new team members. Each individual brought to the team either discipline-specific expertise or broad-based familiarity with research funding at the higher education institutional-level, and represented a diversity of top-tier research institutions from around the country, including the University of Maryland, the University of California, the University of Virginia, and Rensselaer Polytechnic Institute. The recommendations of the consultants were then presented to the Review Board at its April 27, 2004 quarterly meeting.

Upon receiving those recommendations, the Review Board approved the following 2003-04 proposals for funding:

Program	Institution(s)	Amount Funded
1. Vehicle Electronic Systems	Clemson	\$3 Million
2. Translational Cancer Therapeutics	MUSC/USC	\$5 Million
3. Photonic Materials	Clemson	\$5 Million
4. Polymer Nanocomposites	USC	\$3.5 Million
5. Hydrogen Fuel Cells	USC	\$2.5 Million
	<i>Sub-Total FY 03-04</i>	\$19 Million¹
	<i>Total FY 03-04</i>	\$30 Million

This report is presented for information and does not require any action.

¹ Note that two proposals, totaling \$11 Million, were approved by the Review Board during the 2002-03 grant cycle, to be funded as part of the 2003-04 \$30 Million appropriation. Funds for these two projects were allocated by the Review Board on August 23, 2003, leaving \$19 Million available for 2003-04 projects.

<p>USC</p>	<p><u>Polymer Nanocomposites</u> (1 endowed chair)</p> <p>A new generation of plastics based on polymer nanocomposite technology will replace conventional polymers in many applications, changing the amounts of materials that will be necessary to achieve a given result, and creating entirely new applications. Among the potential improved properties are: fire retardancy, impermeability to gases, greater strength, higher temperature tolerance, and longer wear.</p> <p>2003-04 Funding: \$3.5 Million</p>
<p>USC</p>	<p><u>Hydrogen Fuel Cell Economy</u> (1 endowed chair)</p> <p>This center will bring together a unique group of organizations, comprised of university, industrial and government partners and focus its efforts on fostering innovation in hydrogen storage and infrastructure, and to educate the general public in SC on the coming of the <i>Hydrogen Economy</i>, and to encourage technology transfer initiatives that arise from the research and educational efforts.</p> <p>Sensors. Sensors are ubiquitous in the present economy and the development of new sensors for fuel cells, medical devices, and automobiles is a growth industry. Fuels cell currently provide an economic alternative to diesel generation systems and in premium back-up power applications.</p> <p>2003-04 Funding: \$2.5 Million (\$5 Million requested)</p>

Clemson	<p><u>Vehicle Electronic Systems Integration</u> (1 endowed chair)</p> <p>Research activities will be focused on vehicle electronic fundamentals, such as automotive electronics, signal and information processing, microsensors, microelectronic and mechanical systems (MEMS), electronics and sensor integration, networked microsensor technology, and on emerging applications, such as adaptive cruise control, warning systems, integrated pressure systems, inertial sensing, etc. Embedding networks of small, possibly microscopic, sensors and control elements in automobiles and trucks to perform automated monitoring and information processing could drastically enhance and revolutionize the transportation industry.</p> <p>2003-04 Funding: \$3 Million</p>
Clemson	<p><u>Photonic Materials</u> (1 endowed chair)</p> <p>As global use of the Internet expands, with more demand for instantaneous movement of dense video, audio, and graphics files, the need for an all-optical network is continuing to grow. This market need, coupled with research successes coming from university and corporate laboratories, continues to spur demand for materials and devices used in all-optical networks, including new optical fibers, amplifiers, planar lightwave circuits, dense wavelength division multiplexers (DWDM), and backplanes.</p> <p>2003-04 Funding: \$5 Million</p>
MUSC & USC	<p><u>Translational Cancer Therapeutics</u> (2 endowed chairs)</p> <p>MUSC will focus on development of new drugs and testing their activities and mechanisms of resistance in cell lines; USC will utilize mouse models that are predisposed to cancer to study the impact of gene misregulation (over-expression, deficiencies) and therapeutic agents on tumor development in a whole animal system.</p> <p>2003-04 Funding: \$5 Million</p>