

**C. The Research Foundation – Binghamton University’s Center of Excellence –  
Small Scale Systems Integration and Packaging Center (W599)**

July 23, 2009

- Grantee:** The Research Foundation of State University of New York (the “Research Foundation”)
- Beneficiary Organization:** The Small Scale Systems Integration and Packaging Center
- ESD Investment:** A grant of up to \$1,155,666 to be used for a portion of the operating costs for Binghamton University’s Center of Excellence, Small Scale Systems Integration and Packaging Center (“S<sup>3</sup>IP” or the “Center”).
- Project Location:** 85 Murray Hill Road, Vestal, Broome County
- NYS Empire Zone (or equivalent):** N/A
- Project Completion:** December 31, 2009
- Grantee Contact:** Theresa Partell, Sr. Grant and Contract Administrator  
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- Project Team:**
- |                    |               |
|--------------------|---------------|
| Project Management | Robin Alpaugh |
| Affirmative Action | Denise Ross   |
| Environmental      | Soo Kang      |

**Project Description:**

Background

Grantee

The Research Foundation of State University of New York is a private, 501 (c)(3) not-for-profit educational corporation that administers externally funded contracts and grants for and on behalf of the State University of New York. It is a separate, not-for-profit corporation, and as such is not supported by state appropriated tax dollars, nor does it receive support

**The Research Foundation – Binghamton University’s Center of Excellence –  
Small Scale Systems Integration and Packaging Center (W599)**

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services provided to New York State agencies. The Research Foundation provides the administrative flexibility to respond quickly to the special demands of externally funded contracts and grants in a manner that facilitates their scientific or technical execution.

Beneficiary

S<sup>3</sup>IP was established by Binghamton University in 2003. The Center is focused on microelectronics, a technology focus with a historic industrial core in the Southern Tier. Building on the successful Integrated Electronics Engineering Center, a National Science Foundation/State/Industry/University Cooperative Research Center since 1991 and a New York State Center of Advanced Technology since 1993, the Center received designation from New York State in 2004 as a High-Technology Commercialization Center. The designation came with a \$21M capital equipment grant through the Governor’s office, SUNY Construction Fund and Dormitory Authority, to build infrastructure in the area of small scale systems so as to enable commercialization activities in the Southern Tier and New York State. In 2005, the Center developed an additional focus in the emerging field of flexible electronics, and won a \$12.5M national peer-reviewed contract from the United States Display Consortium to build the Center for Advanced Microelectronics Manufacturing (“CAMM”, which is part of S<sup>3</sup>IP, but located off-campus) for the research and development of flexible electronics in a roll-to-roll manufacturing format. S<sup>3</sup>IP was designated as a NASA National Center of Excellence in 2005 and received New York State Center of Excellence designation in 2006.

S<sup>3</sup>IP is focused on five initial thrust areas which are expected to grow as the Center develops: systems integration and packaging; flexible electronics; sensors and new materials for electronic systems; advanced analytical and diagnostics expertise; and energy and thermal management. The five areas are inherently multi-disciplinary and complementary, and are significant for the advancement of the medical, military, solar and energy, computer, telecommunications, and consumer products industries. The Center’s objectives are to conduct research and development activities in conjunction with federal, state, academic, and private partners, to facilitate new applications and systems that will improve people’s lives and result in commercialization and new product development.

In the area of infrastructure, the Center recently developed the Analytical and Diagnostics Laboratory (“ADL”) to complement its electronics packaging and flexible electronics instrumentation. The ADL is a centralized, interdisciplinary, fully staffed research facility that enables the commercialization of microelectronic technologies by providing major instruments and technical support for materials diagnostics, analysis and device processing in areas such as electronics systems integration and packaging, materials research and flexible electronics. The Lab also supports life sciences research applications in medical areas, security systems for detection of pathogens and additional industrial and consumer applications, both directly as well as through related emerging technologies.

**The Research Foundation – Binghamton University’s Center of Excellence –  
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July 23, 2009

In February 2008, ESD approved a \$1,179,166 working capital grant for the ADL which was used to: 1) provide expert training for students, scientists and engineers in experimental techniques; 2) provide the technical expertise necessary to operate sophisticated experimental equipment; 3) develop important scientific, technical, instrumentation or process advancements; 4) participate in and enhance activities related to educational and industrial outreach; 5) facilitate cooperation between industry and universities; 6) provide a meeting ground for researchers from varied disciplines; and 7) foster interactions that may develop into interdisciplinary collaborations. As of April 2009, all but \$20,011 of the grant has been disbursed to the Research Foundation.

The Project

As part of the overall mission of the Center, this second appropriation of working capital funds will be utilized for project costs in the following areas: 1) provide a portion of the salaries and fringes for the Center’s Director, Associate Director, Education Coordinator Faculty and CAMM Research Faculty, Postdoctoral Research Assistant, Administrative/ Finance Assistants, CAMM Graduate Research Assistant, ADL Laboratory Manager and Research Scientists and Engineers; 2) travel funds for faculty and students to attend professional meetings/conferences, visits to New York State companies to promote S<sup>3</sup>IP facilities and expertise, and for travel associated with equipment training for ADL staff; 3) research materials and supplies for the CAMM, ADL research supplies and Center office supplies for staff; 4) purchase of tools and equipment at the Center; 5) additional costs involved in Center initiatives including publication expenses, seed grants for faculty equipment usage, S<sup>3</sup>IP seminar series, “Go Green” K-12 Institute; software licensing, publication costs, marketing materials; and 5) facilities and administrative costs. ESD funds will be used for eligible working capital expenses.

Upon completion of the project, and semi-annually thereafter, the Grantee will furnish a final report consisting of project impact and performance measurements in a manner prescribed by ESD.

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Financing Uses	Amount	Financing Sources	Amount	Percent
Personnel costs - Director, Assoc. Director, Education Coordinator, Admin/Finance, Research Assistant, Lab Manager, Scientist, Technician	\$2,738,297	ESD Grant	\$1,155,666	17%
Materials and Supplies	304,505	Binghamton University Equity	305,433	4%
Travel	281,082	Other Sources*	5,358,043	79%
Equipment	705,000			
Other Direct Costs - Go Green Institute	1,762,309			
Indirect Soft Costs - software licensing, marketing	1,027,949			
<b>Total Project Costs</b>	<b>\$6,819,142</b>	<b>Total Project Financing</b>	<b>\$6,819,142</b>	<b>100%</b>

\*Other Sources include: US Army Research Lab, NASA, NYSTAR, Industrial Members of the CAMM and the Integrated Electronics Engineering Center

**Financial Terms and Conditions:**

1. The Grantee will be obligated to advise ESD of a material adverse change in its financial condition prior to disbursement.
2. Up to \$1,155,666 will be disbursed to Grantee, no more frequently than quarterly, upon documentation of eligible working capital project costs, assuming that all project approvals have been completed and funds are available. The final 10% of the grant (\$115,567) will be disbursed upon documentation of \$6,819,142 in eligible working capital project costs. Payment will be made upon presentation to ESDC of an invoice and such other documentation as ESDC may reasonably require. Expenses must be incurred on or after April 1, 2008 to be considered eligible project costs.

**The Research Foundation – Binghamton University’s Center of Excellence –  
Small Scale Systems Integration and Packaging Center (W599)**

July 23, 2009

3. ESD may reallocate the project funds to another form of assistance, at an amount no greater than \$1,155,666, for this project if ESD determines that the reallocation of the assistance would better serve the needs of the Grantee and the State of New York. In no event shall the total amount of any assistance to be so reallocated exceed the total amount of assistance approved by the Directors.

**Statutory Basis – Aid to Localities – Centers of Excellence:**

The project was authorized in the 2008-2009 New York State budget and reappropriated in the 2009-2010 New York State budget. No residential relocation is required as there are no families or individuals residing on the site.