

Florida High Tech Corridor

2002-2003 USF "External Matching Grant" Project Awards

20 awards were issued for a total of \$1 million in grants, generating over \$2.2 in private sector matching investment from 20 companies.

Bhethanabotla, Venkat & Bhansali, Shekhar, "Film Deposition and Characterization of Liquidmetal™ Alloys for MEMS Applications." Grant amount: \$50,000. Partner companies: Liquidmetal™ Technologies.

Layman's Abstract: Liquidmetal™ alloys have excellent properties (2-3 times stronger and harder than titanium, more elastic than any other metal or alloy known, etc.) and have found many applications in the bulk form. This project focuses on the development and characterization of Liquidmetal™ thin films as low friction interfaces for active MEMS devices.

Dunleavy, Lawrence, "High Rate Wireless 5GHz OFDM Impairments." Grant amount: \$22,575. Partner companies: Intersil & Tektronix.

This project will represent collaboration with faculty in solving important issues in wireless communication system hardware development involving a combination of radio frequency and digital signal processing techniques.

Dunleavy, Lawrence, "Precision Characterization for Wireless and Millimeter-wave Design". Grant amount: \$150,000. Partner companies: Anritsu Company & Raytheon Systems.

The program will fund six graduate students in the area of enhanced wireless and microwave/millimeter-wave circuit design and precision experimental characterization. The Matching Grant will provide enabling instrumentation capabilities, and including a temperature dependent and pulsed bias probing systems.

Ferekides, Chris, "Hgl2-based Photo-detectors for Homeland Security and Medical Applications." Grant amount: \$74,507. Partner companies: Constellation Technology.

Thin films of Hgl2 can be used as photo-detectors in high-energy nuclear radiation detectors. Hgl2 has the potential of decreasing the cost, size, and sensitivity of these systems. Applications include Homeland Security and nuclear medicines.

Garbuzova-Davis, Svitlana, "Umbilical Cord Blood-Derives Stem Cells to Treat ALS." Grant amount: \$59,360. Partner companies: Saneron CCEL Therapeutics, Inc & StemCo Biomedical, Inc.

Amyotrophic lateral sclerosis (ALS) is a fatal degenerative disease affecting motor neurons in the spinal cord, brainstem, and cortex. The project will transplant stem-cell-enriched human umbilical cord blood into a mouse model of ALS. This will determine the effectiveness of these cells in delaying disease symptoms and increasing lifespan.

Harmon, Julie, "Development of Novel Underfill Formulations with High Thermal Conductivity." Grant amount: \$50,000. Partner companies: Honeywell Inc.

The project addresses the problem of developing polymeric composites with high thermal conductivity for use in advanced packaging technologies for electronics.

Harmon, Julie, “Lithium Ion Conductivity Mechanism in Polymer Solid State Electrolyte.” Grant amount: \$10,000. Partner companies: Honeywell Inc.

The project addresses the issue of analyzing polymer battery formulations via NMR, thermal analysis and optical spectroscopy.

Jain, Vijay, “Transforming OWSS Into a 4G Wireless Technique.” Grant amount: \$33,000. Partner companies: Intersil Corporation.

Next generation wireless technology will facilitate everything from ‘learning on-demand’ to ‘filling the information tank from an info station’, and to ‘visiting the day-care center virtually’ on mobile devices. The goal of this research is to help develop this exciting, future technology.

Katkoori, Srinivas, “Requirements Analysis for an Automated Synthesis Framework for the Honeywell Reconfigurable Space Computer.” Grant amount: \$7,500. Partner companies: Honeywell International Inc.

The project staff will perform a detailed requirements analysis for an automated synthesis framework for the Honeywell Reconfigurable Space Computer.

Killinger, Dennis, “Laser Enhancement to Endospore Anthrax Sensor.” Grant amount: \$80,000. Partner companies: Ocean Optics, Inc.

The project will use a laser to enhance sensitivity of spectrometer based endospore sensor used to detect Anthrax.

Kumar, Ashok, “Nanoscale Chemical, Tribological and Mechanical Properties of Surface Engineered/Modified Polymers.” Grant amount: \$85,137. Partner companies: PsiloQuest Inc.

The main objective of the project is to understand the chemical, mechanical and tribological properties of plasma treated chemical mechanical planarization pads for semiconductor manufacturing applications. This project will include the use of UCF research facilities and , hopefully, to a joint NSF proposal.

Kumar, Ashok, “Nanotechnology for Solar Control Film Applications.” Grant amount: \$50,000. Partner companies: Brycoat, Inc.

The main objective of the project is to fabricate highly homogeneous nanoparticle-polymer composite coatings for optimal UV absorption with better mechanical properties (toughness and stiffness) for window film applications.

Liuzzi, Francis, “A Tissue Engineered Living Sertoli Cell-Type I Collagen Bioactive Nerve Guide for Peripheral Nerve Repair.” Grant amount: \$43,250. Partner companies: Saneron CCEL Therapeutics, Inc.

The object of the project is to design and fabricate a living Sertoli cell-type I bioactive nerve guide for the repair of nerve gaps following traumatic nerve injury. The nerve guide will be developed and tested using an animal model of nerve repair. The goal is to develop a nerve guide for clinical use in human nerve repair.

Rahman, Muhammad, “Thermal Control of Microelectronics in Space.” Grant amount: \$10,000.
Partner companies: Honeywell, Inc.

The project will develop a device for the control of temperature in microelectronics fielded space vehicles. This will guarantee long life and high reliability of sensors and processors.

Ranganathan, Nagarajan, “Dynamic scheduling for fault tolerance and an object oriented query language for heterogeneous computing system.” Grant amount: \$38,641. Partner companies: Tandel Systems LLC.

The focus of this project is to design and develop (i) dynamic scheduling algorithms for fault tolerance and (ii) a framework for object oriented query language to support a heterogeneous systems.

Schlaf, Rudy, “Design and Construction of Carbon Nanotube Reactors.” Grant amount: \$28,4000.
Partner companies: Applied Nanotechnologies, Inc.

The project focuses on the development of a chemical vapor deposition reactor, and the growth of tailored carbon nanotubes (CNT) in specialized locations and orientation on wafer sized substrates. This will enable batch processing of carbon nanotube devices allowing commercialization of this process.

Weller, Tom, “Advanced Microwave Technology for Space Applications-MEMS Switch Architectures.” Grant amount: \$25,000. Partner companies: Raytheon.

Microwave switching devices that are based upon micro electro-mechanical systems (MEMS) technology hold great potential for performance –critical environments such as space. In the special applications of interest, reliability and off-state isolation are among the most important switch characteristics. Novel design techniques will be pursued as part of this work in order to advance the current state of the art in this area. An additional area of emphasis will be the design and demonstration of a mm-wave integrated circuit assembly with requisite redundancy paths.

Weller, Tom , “High-Efficiency Miniaturized Antennas on Lossy Silicon Substrate.” Grant Amount: \$25,000. Partner companies: InFlux.

In this project, electromagnetic design techniques and semi-conductor process methods, both aimed at advanced antenna development, will be investigated. The goal is to realize physically small, high performance antennas that are integrated on silicon substrates of the type utilized for radio frequency integrated circuits (RFICs). Direct integration of the antenna with the RFIC is a critical milestone for current single chip radio” technology.