

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Hayden Mattingly, Biology

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Science Committee Coordination for the Cumberlands Habitat Conservation Plan

Activation Amount: \$46,495.00

Agency: The Nature Conservancy

Principal Investigator: Xubin He, Electrical and Computer Engineering

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Lightweight Metadata Virtualization

Activation Amount: \$15,000.00

Agency: Oak Ridge National Laboratory

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Sharon Berk, Water Center

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Research Work Plan to Test Eight Biocides against Legionella pneumophila Sequestered with Food Vacuoles of Acanthamoeba polyphaga

Activation Amount: \$54,000.00

Agency: The Dow Chemical Company

Principal Investigator: Ben Byler, Agriculture

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Tennessee Association FFA Camp Clements Leadership Grant 2006-07

Activation Amount: \$15,137.00

Agency: Tennessee Department of Education

This project is for the provision of providing services to the Tennessee Association FFA and its FFA members, advisors, and other groups attending Camp Clements Leadership Camp near Doyle, TN.

The project will provide staff for two full-time coordinators to serve as administrators of Camp Clements. One coordinator is for the purpose of coordinating all programming activities at Camp Clements. The other coordinator position is for the purpose of serving as administrator of the camp facilities and equipment including the housing facilities for campers, administration building, classrooms, auditorium, boating facilities, amphitheater, recreation hall, cafeteria, swimming pool, and staff housing facilities.

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Benjamin Mohr, Civil and Environmental Engineering

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Nanoscale Differences Between Early and Late Age Ettringite in Portland Cement-Based Materials (Powe Award)

Activation Amount: \$5,000.00

Agency: Oak Ridge Associated Universities

Delayed ettringite formation is an increasingly frequent durability problem that typically occurs in steam cured precast concrete members. Steam curing is used to accelerate the rate of strength gain to produce a faster turnaround time. However, the advantages of increased early age strength may be offset by expansion and subsequent cracking due to delayed ettringite formation. Once concrete cracks, structural integrity is compromised and several other durability issues can initiate (e.g., corrosion of reinforcing steel). The objectives of this research is to investigate the nano- and micro-scale differences between early age, delayed, and secondary ettringite as these differences relate to macro-scale behavior. Since these three types of ettringite are morphologically similar, but form through separate processes, there appears to be distinct mechanisms responsible for their formation. To begin understanding these mechanisms, it is necessary to study the microstructural development of ettringite formation at the nanoscale. Thus, this research will investigate the mechanisms of delayed and secondary ettringite formation by examining the crystalline/atomic structure of these products via high-resolution powder x-ray diffraction.

Principal Investigator: Kevin Liska, Business Media Center

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Post-Katrina Marketing for Southern Univeristy of New Orleans

Activation Amount: \$24,990.00

Agency: State of Louisiana

Develop and assist Southern University of New Orleans with mission critical marketing for the University and the new E-Learning Department. This project is a direct result of Hurricane Katrina and the devastation it caused to SUNO. TTU is providing valuable assistance that has been nationally recognized as a key factor in the rebuilding of SUNO.

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Dale Ensor, Chemistry

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Separation Studies of /f/-Elements

Activation Amount: \$14,270.00

Agency: Oak Ridge National Laboratory

The Advanced Fuel Cycle Initiative Program investigates various processes related to the chemical processing of spent nuclear fuel. The separation of americium and curium (minor actinides) from fission products especially the +3 lanthanides remains a difficult problem because of the similarities in the aqueous chemistry of these elements. A number of processes have been developed to effect this separation and research in this area has been revived with the current focus on spent fuel processing. Several new extractants have been synthesized and tested and show promising results for this difficult separation. Two groups of compounds in particular are the triazinyl pyridines (BTP) and the dithiophosphinic acids. Compounds of both types have been synthesized at Oak Ridge National Laboratory and preliminary process development studies showed promising results, but problems with acid hydrolysis, air oxidation, and chemical process stability were noted. The extractant, 2,6-bis (5,6-di-ethyl-1,2,4-triazin-3-yl-pyridine), BTP will be impregnated on a pre-filtered resin support using dichloroethane as the solvent. Preliminary studies will include batch distribution experiments of the light lanthanides (La(III), Nd(III), and Eu(III)) in 0.5 M nitric acid using the newly prepared resin. Based on these results column studies will be designed to evaluate the ability of the resin to separate the light lanthanides from the minor actinides. Analysis of the light lanthanides will be done by ICP-OES. A second chromatographic material will be prepared using a substituted thiophosphinic acid (ORNL) combined with the neutral extractant tris(2-ethylhexyl)phosphate. This combination has been reported to yield an Am(III)/Cm(III) separation factor of 8 in a liquid-liquid extraction system and a separation factor of greater than 3000 for Am(III)/Ln(III). Initial evaluation of this resin will involve batch distribution measurements of Am(III) and Eu(III) from a range of nitric acid concentrations. Based on these experiments, column studies to evaluate the separation of the light lanthanides from the minor actinides would be performed.

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Joseph Biernacki, Chemical Engineering

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Buckeye Experimentation of Cement with and without Fibers

Activation Amount: \$8,813.00

Agency: Buckeye Technologies, Inc.

This consulting work consists of experiments to characterize the effect of fibers on cement hydration and resulting pore structure in hydrated cement.

Principal Investigator: Stephen Canfield, Mechanical Engineering

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Advanced Development and Demonstration of 3 DOF Parallel Architecture Joint for Key In-Space Applications

Activation Amount: \$75,000.00

Agency: NASA

Many in-space applications require the ability to physically point or orient an object on a spacecraft. Some common examples include directing solar arrays, attitude control thrusters, antennas and the like. Further, some applications require pointing at a fixed source while undergoing some continuous rotation. One example of this would be a rotating spacecraft such as the proposed MXER tether system. A number of solutions have been proposed and are in application to address these needs. However, improved solutions are of value. This proposal will significantly advance the development and provide demonstration of a unique gimbal system for in-space applications based on a three dof (degree of freedom), 3-5R parallel-architecture platform. Four specific objectives have been defined to advance the technology readiness level of the proposed gimbal mount. The first objective will provide robust joint operation through the design and implementation of an advanced control system. The second objective will incorporate all joint control algorithms into an embedded microcontroller selected as ready for an in-space environment. The third objective is to provide full characterization of the joint system dynamics. The fourth objective will explore advanced control schemes based on an inverse-dynamics controller.

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Dennis George, Water Center

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Water Center Analytical and Computer Science

Activation Amount: \$97,704.00

Agency: various

Principal Investigator: Sastry Munukutla, Energy Systems Research

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Service Account 2006-07

Activation Amount: \$30,813.00

Agency: various

Grants Awarded

From 6/1/07 To 6/30/07

Principal Investigator: Kenneth Currie, Manufacturing Center

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: Testing and Design 2006-07

Activation Amount: \$52,916.00

Agency: various

Principal Investigator: Kenneth Currie, Manufacturing Center

Supporting Professional(s):

Supporting Professional(s) Department(s):

Project Title: General Work Study 2006-07

Activation Amount: \$187,294.00

Agency: various