Student Poster Paper Overview

Competitive Academic Agreement Program
8/6/2014

Competitive Academic Agreement Program (CAAP): Objectives

- Program to spur pipeline safety innovation through academic research
- Intended to deliver “hand-off” solutions for further investigations in PHMSA’s core research program
- Expose “undergrad/graduate students” to pipeline safety challenges and how technical discipline is needed
- Eight awards in 2013. Five or more new awards in 2014

CAAP Since Launching in 2013

No.	Prj No	Status	AOTR	Contractor	Project Title	PHMSA	Resource Sharing	Start
CAAP-1-13								
1.	505	Active	Merritt, James	Texas A&M Engineering Experiment Station	*"Radio Frequency Identification (RFID) Smart Corrosion Coupon"*	$99,512	$43,895	Oct 2013
2.	506	Active	Merritt, James	University of Tulsa	*"Scaling Factors and Self-Sensing in Composite Repairs of Corrosion Defects"*	$99,635	$42,701	Oct 2013
3.	507	Active	Merritt, James	University at Buffalo	*"Permanently Installed Pipeline Monitoring Systems"*	$100,000	$42,972	Oct 2013
4.	508	Active	Merritt, James	University of Colorado Denver	*"Proactive and Hybrid Sensing based Inline Pipeline Defects Diagnosis and Prognosis"*	$100,000	$42,857	Oct 2013
5.	509	Active	Merritt, James	North Dakota State University	*"Composite Self-sensing Thermal Sprayed Coatings for Pipeline Corrosion Prevention and Mitigation"*	$98,507	$42,217	Oct 2013
6.	510	Active	Merritt, James	Columbia University	*"Mitigating External Corrosion of Pipelines Through Nano-Modified Cement-Based Coatings"*	$95,032	$40,742	Oct 2013
7.	511	Active	Merritt, James	Iowa State University	*"Advanced Nondestructive Characterization of Pipeline Materials"*	$100,000	$50,000	Oct 2013
8.	512	Active	Merritt, James	Ohio University	*"Enhanced Mitigation of Pipeline Biocorrosion Using A Mixture of D-Amino Acids with A Biocide"*	$99,999	$48,540	Oct 2013
					CAAP-1-13 Total:	**$792,685**	**$353,924**	
GRAND TOTALS:						$792,685	$353,924	

CAAP Summary Totals

Annual Announcement	# Awards	PHMSA	Resource Sharing	# U-Grad Students	# Grad Students	# PhD Students	Total # Students
CAAP-1-13	8	$ 792K	$ 353K	5	14	9	28
Grand Totals:	**8**	**$ 792K**	**$ 353K**	**5**	**14**	**9**	**28**

https://primis.phmsa.dot.gov/rd/universitypartners.htm

Radio Frequency Identification (RFID) Smart Corrosion Coupon

Project Objective: This project seeks to develop a novel type of smart corrosion coupons using Radio Frequency Identification (RFID) technology for continuously real-time wireless monitoring of corrosion.

Recipient: Texas A&M Engineering Experiment Station

Principle Investigator: HAO CHEN, Ph.D.

TEXAS A&M UNIVERSITY
TEES

Scaling Factors and Self-Sensing in Composite Repairs of Corrosion Defects

Project Objective: This project seeks to resolve two fundamental questions regarding the composite repair approach:

1. Do scaling effects have an impact on repair performance?
2. How can an operator effectively inspect these repairs during the design lifespan?

Recipient: University of Tulsa

Principle Investigator: Michael Keller

THE UNIVERSITY of TULSA

Permanently Installed Pipeline Monitoring Systems

Project Objective: This project seeks to design and implement a built-in monitoring system for corrosion-damage assessment in pipelines. The system will be able to operate in a dual monitoring mode:

1. Real-time continuous; and
2. Routine-based inspections

Recipient: University at Buffalo

Principle Investigator: Salvatore Salamone

University at Buffalo The State University of New York

U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

Proactive and Hybrid Sensing based Inline Pipeline Defects Diagnosis and Prognosis

Project Objective: This project seeks to support the development of a new form of hybrid sensing technique, thermoelectromagnetic-acoustic (TEA) method that can identify and characterize injurious pipe body proactively with superior resolution and high sensitivity.

Recipient: University of Colorado-Denver (UoCD)

Arizona State University (ASU)

Principle Investigators: Yiming Deng-UoCD

Dr. Yongming Liu-ASU

ASU Arizona State University

University of Colorado Denver | Anschutz Medical Campus

Composite Self-sensing Thermal Sprayed Coatings for Pipeline Corrosion Prevention and Mitigation

Project Objective: This project seeks to develop a composite self-sensing thermal sprayed coating for pipeline external corrosion prevention and mitigation. This will introduce a new alternative strategy for developing a self-monitored protective layer for pipelines used in corrosive and destructive environment in a single manufacturing step via thermal spraying technique.

Recipient: North Dakota State University

Principle Investigator: Fardad Azarmi

NDSU NORTH DAKOTA STATE UNIVERSITY

Mitigating External Corrosion of Pipelines Through Nano-Modified Cement-Based Coatings

Project Objective: This project seeks to mitigate external corrosion of pipelines by engineering a cement-based coating material that exhibits superior sealing properties and ease of implementation.

Recipient: Columbia University

Principle Investigator: Shiho Kawashima

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Advanced Nondestructive Characterization of Pipeline Materials

Project Objective: This project seeks to further develop pipe characterization capabilities to establish links between Non Destructive Evaluation measurements and the mechanical properties of importance, including yield strength, tensile strength, fracture toughness and transition temperature. This research project will investigate the possibilities for developing a suitable in the ditch measurement method for the values needed to determine the actual pressure rating of a pipeline.

Recipient: Iowa State University

Principle Investigator: Leonard J. Bond

IOWA STATE UNIVERSITY

Enhanced Mitigation of Pipeline Biocorrosion Using A Mixture of D-Amino Acids with A Biocide

Project Objective: This project seeks to develop a new biocide enhancer technology from laboratory tests to field applications to mitigate biofilms in the prevention of Microbial Induced Corrosion.

Recipient: Ohio University

Principle Investigator: Tingyue Gu

OHIO UNIVERSITY
1804

Student Poster Paper Session

- **See the poster papers (8 of them)**
  - O'Hare Pre-Function area around the registration desk
- **Meet the students**
- **Today August 6, 2014**
  - Morning Break (15 minutes)
  - Prior to Lunch (55 minutes)