

**Department of Civil & Environmental Engineering**  
**Selected Research Grants of the Last Five Years (Partial List)**

**Dr. Farshad Amini**

PI or Co-PI of more than 50 major research grants.

- Title: Development of Mixed Reality Facilitated Teaching Model to Enhance STEM Education, PI: F. Amini, Lin Li, J. Yin, & W. Walters; National Science Foundation; Amount: \$350,000; 2018-2021
- Title: Performance Evaluation of Highway Slopes on Yazoo Clay, PI: K. Khan & F. Amini; MDOT; 196,500.00; 2018-2022.
- Title: Investigating the Effect of Active Flipped Learning in STEM Education; PI: F. Amini; Co-PI: L. Li, Co-PI: J. Lin, T. Kewmbe, T, National Science Foundation; Amount: \$350,000; 2016-2019
- Title: MRI: Acquisition of a Multi-Beam SEM/FIB for Multidisciplinary Materials Study and Training; NSF; PI: Li, Lin, Co-PI: F. Amini, W. Walters, A. Hamme; NSF; October 2015-September 2018; Amount: \$559,660.00.
- Title: Airborn Survey System for Enhancement of Surveying Engineering Laboratory to Support ABET Accredited Civil Engineering Program at Jackson State University; PI: S. Khan; Co-PI: F. Amini; Total Amount: \$ 31,600.00.00; Supported by: MS Board for Licensure for Professional Engineers & Surveyors; Dates: 2018-2019
- Title: Enhancement of Environmental Engineering Laboratory to Support ABET Accredited Civil Engineering Program at Jackson State University; PI: Danuta Leszczynska and Co-PI: F. Amini; Total Amount: \$ 22,000.00; Supported by: MS Board for Licensure for Professional Engineers & Surveyors; Dates: 20018- 2019
- Title: Enhancement of Surveying Engineering Laboratory to Support ABET-EAC Accredited Civil Engineering Program at Jackson State University; PI: F. Amini; Amount: \$ 25,000.00; Supported by: MS Board for Licensure for Professional Engineers & Surveyors; Dates: 2016
- Title: Enhancement of Hydraulics Engineering Laboratory to Support ABET-EAC Accredited Civil Engineering Program at Jackson State University; PI: H. Das and F. Amini; Amount: \$ 27,168.00; Supported by: MS Board for Licensure for Professional Engineers & Surveyors; Dates: 2016
- Numerical Water Quality and Contaminant Modeling, Engineer, Research, and Development Center, 2012-2014. PI: F. Amini; Amount: \$ 280,000.00.
- 2017-2022 Students Summer Research Internship Program, Engineer, Research, and Development Center, 2012-2017. PI: Y. Li, Co-PI: PI: F. Amini; Amount: \$ 1,6,000,000.
- Innovative Levee Strengthening and Testing under Full-Scale Overtopping Conditions, Department of Homeland Security (DHS), 2009-2012. PI: F. Amini; Co-PI: L. Li, Amount: \$ 1,000,000.

- High Performance Turf Reinforcement Mat Strengthened Levee under Combined wave and Storm Surge Turbulent Overtopping Conditions, DHS, 2011-2012. PI: F. Amini, Co-PI: Dr. L. Li; Amount: \$ 450,000.
- Long-Term Field Studies and Monitoring of Paving Fabric Systems to Reduce Reflective Cracking; Mississippi Department of Transportation (MDOT), 2005-2015. PI: F. Amini; Amount: \$ 218,000.
- Numerical Water Quality and Contaminant Modeling, Engineer, Research, and Development Center, 2012-2014. PI: F. Amini; Amount: \$ 120,000.
- Assessment of Pavement Infrastructure, Department of Transportation, 2010-2012. PI: F. Wang; Co-PI: F. Amini, and L. Li; Amount: \$ 712,500.
- 2012-2016 Students Summer Research Internship Program, Engineer, Research, and Development Center, 2012-2017. PI: Y. Li, Co-PI: PI: F. Amini; Amount: \$ 2,000,000.
- Summer Transportation Program; MDOT/FHWA; 2017-2018; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 62,000.00
- Summer Transportation Program; MDOT/FHWA; 2016-2017; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 62,000.00
- Summer Transportation Program; MDOT/FHWA; 2015-2016; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 62,000.00
- Summer Transportation Program; MDOT/FHWA; 2014-2015; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 62,000.00
- Cost-Effectiveness Study of the Pavement Warranty Program in Mississippi, Mississippi Department of Transportation, 2011-2013. PI: Y. Qi, Co-PI: F. Wang & F. Amini; Amount: \$ 130,000.
- Evaluation of MDOT's Distress Thresholds for Maintained Pavement Projects, Mississippi Department of Transportation, 2009-2011. PI: F. Wang, Co-PI: F. Amini; Amount: \$ 120,000.
- Comparative Slope Stability Analysis for Hurricane Protection Systems Using the Method of Planes and the Method of Slices, Burns Cooley Dennis Inc., 2007-2008. PI: F. Amini; Amount: \$ 119,119.
- Hyper Velocity Impact - Environmental Resistant Nano Materials in Space Applications, NASA, PI: P. Sukanek, Co-PI: A. Alostaz et al., & F. Amini, 2013-2016; joint research with U. of Mississippi; Total Amount: 200,000 (JSU portion: 20K)
- Summer Transportation Program; MDOT/FHWA; 2013-2014; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 58,000.00
- Summer Transportation Program; Mississippi Department of Transportation (MDOT), 2010-2012. PI: I Simone; Co-PI: F. Amini; F. Wang; Amount: 40,000.
- Summer Transportation Program; MDOT/FHWA; 2012-2013; PI: Lin Li; Co-PI: F. Amini; Amount: \$ 58,000.00

### **Dr. Danuta Leszczynska (Partial List)**

- Development of Efficient Computer System for Predictions of Ecological Effects of Organic Pollutants; ERDC; PI: D. Leszczynska; Amount: \$ \$108,789, March 1, 2012-March 1, 2013
- Prediction of Thermodynamically-Stable Adsorption Sites Using Chemical and Classical Models, Department of Army ERDC, PI: D. Leszczynska; Amount: \$ 64,999.61, March 1, 2012-March 1, 2013
- NanoQSAR, NSF thru MSU, PI: D. Leszczynska, Amount: \$6949.00, September 1, 2011-August 31, 2012
- Application of Random Forest and Multiple Linear Regression Techniques to QSPR Prediction of Partition Coefficients for Military Compounds, Department of Army ERDC, PI: D. Leszczynska, Amount: \$69,998.89, March 1, 2011-March 1, 2012
- Prediction of Thermodynamically-Stable Adsorption Sites Using Chemical and Classical Models, Department of Army ERDC, PI: D. Leszczynska, Amount: W912HZ-11-1-004, \$ 64,999.61, February 24, 2011-March 1, 2012
- Combined Experimental and Theoretical Study on Degradation Pathways of Organic Compounds in Water in the Presence of Nanotubes, DOE through ERDC, PI: D. Leszczynska, Amount: \$317,451, September 1, 2010- June 30, 2012
- High Performance Computational Design of Carbon Nanotubes Based Chemical Sensors, DOE through ERDC, PI: D. Leszczynska, Amount: \$300,349, September 1, 2010-August 31, 2011 (year 5), extended to June 30, 2012

### **Dr. Lin Li (Partial List)**

- Title: MRI: Acquisition of a Multi-Beam SEM/FIB for Multidisciplinary Materials Study and Training; Li, Lin, Co-PI: F. Amini, W. Walters, A. Hamme; NSF; Amount: \$559,660.00; October 2015-September 2018.
- MRI: Acquisition of ICP-OES for Multidisciplinary Environmental Studies and Training, NSF, Sept. 1, 2010- Aug. 2013. PI: Yadong, Co-PI: Lin Li; Amount: \$245,877.00
- HPTRM Strengthened Levee under Combined Wave and Storm Surge Turbulent Overtopping Conditions; DHS, Apr. 2011-Aug. 2012. PI: F. Amini; Co-PI: Lin Li; \$450,000.00.
- Innovative Levee Strengthening and Testing under Full Scale Overtopping Conditions; PI: F. Amini; Department of Homeland Security, Jan. 2009-Sep. 2011. PI: F. Amini; Co-PI: Lin Li; \$1,000,000.00.
- Using WiscLEACH to Estimate Groundwater Impacts from Coal Combustion Products in Highway Construction, RMRC, Federal Highway Administration, Jun 2008- May. 2011. PI: Lin Li; Amount: \$61,533.00
- Green Highway Rating System in Mississippi, Institute for Multimodal Transportation, Jackson State University, July 2010-June 2011. PI: Lin Li, Co-PI: F. Amini; Amount: \$35,000.00.
- Assessment of Critical Transportation Infrastructure; Department of Homeland Security, Oct. 2009-Sep. 2010. PI: F. Wang, Co-PI: F. Amini; Co-PI: L. Li; \$712,500.00.

- Lake Chicot Visitor Center Display, U.S. Army Corps. Of Engineers, Oct. 2007-Mar. 2008. PI: F. Amini; Co-PI: L. Li; Amount: \$12,425.00.
- Summer Transportation Program; MDOT/FHWA; 2013; PI: Lin Li; Co-PI: F. Amini; Amount: 58,000.

**Dr. Yadong Li (Partial List)**

- 2017-2022 Students Summer Research Internship Program, Engineer, Research, and Development Center, 2012-2017. PI: Y. Li, Co-PI: PI: F. Amini; Amount: \$ 1,600,000.
- 2012-2016 Students Summer Research Internship Program, U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC), April 1, 2012 – March 31, 2016. PI: Yadong Li, Co-PI: Farshad Amini; Amount: \$2,000,000.
- MRI: Acquisition of An ICP-OES for Multidisciplinary Environmental Studies and Training, National Science Foundation, Sept. 1, 2010- Aug. 2013. PI: Yadong, Co-PI: Lin Li; Amount: \$245,877
- Rubber Sample Testing; INSA, LLC; PI; Y. Li; Co-PI: Yiming Liu; Jan 2013-Dec 2015; \$73,873
- Enhancing Transportation Education through Real-World Design Projects, Institute for Multimodal Transportation (IMTRANS), Jackson State University, July 1, 2009-June 30, 2010. PI: Yadong Li; Amount: \$11,913
- Research Experiences for Teachers, National Science Foundation, July 1, 2006-June 30, 2007. PI: Yadong Li; Amount: \$20,000
- Study of E-waste Environmental Hazards and Treatment, National Science Foundation CAREER Award, July 1 2003-June 30 2008. PI: Yadong Li; Amount: \$400,398

**Dr. Wilbur Walters (Partial List)**

- JSU-MPA Explorers Program, NASA Marshall Space Flight Center, June 1 2011 – December 15 2014, PI: W.Walters; Amount: \$150,000.
- JSU-MPA Explorers Program, NASA Marshall Space Flight Center, May 1 2010 – December 15 2010, PI: W.Walters; Amount: \$59,993.
- Precision Control of Piezoelectric Actuators with an Inversion Based Approach, Jackson State University Scholars Program, June 2010 –October 2010, PI:H.Shih, Co-PI: W.Walters \$10,000.
- Hybrid Nanocomposite Coatings for Improved Impact Resistance and Bond Durability, Office of Naval Research, PI: W.Walters, July 2009 – June 2012; PI: W.Walters; Amount: \$900,000.
- NUE-Nanotechnology in Undergraduate Education and Student Research at Jackson State University, National Science Foundation, PI: W.Walters, August 2008- July 2010; Amount: \$200,000

**Dr. Feng Wang (Partial List)**

- MDOT funded “Cost-Effectiveness Study of the Pavement Warranty Program in Mississippi”, 2012-2014, Co-PI, \$150k.

- MDOT funded “Simulation Study of Emergency Evacuation of Mississippians near Grand Gulf and River Bend Power Plants due to a Nuclear Accident”, 2012-2014, PI, \$160k.
- MDOT funded “State-of-Practice Approaches and Technologies for Inventory Data Collection of Mississippi’s Public Road System”, 2012-2013, Co-PI, \$60k.
- USDOT funded “Assessment of Pavement Infrastructure for Use in a Pavement Management System”, 2010-2012, PI, \$725k.
- MDOT funded “Evaluation of MDOT’s Distress Thresholds for Maintained Pavement Projects”, 2010-2012, PI, \$120,421.
- MDOT funded “Emergency Evacuation Study for the Greater Jackson Area: DYNASMART-P Deployment in Mississippi DOT”, 2009-2011, PI, \$59,544.
- IMTrans funded project “Development of Operational Strategies for Emergency Evacuation on a Metropolitan Freeway Network”, 2008-2009, PI, \$50k.

**Dr. Wei Zheng (Partial List)**

- Investigation of Effects of Scaffolding Creative Problem Solving Through Question Prompts in Project-Based Service Learning, National Science Foundation, 10/01/2010-09/30/2013, PI: Wei Zheng, Co-PIs: Valerie Shelby, and Jianjun Yin, Amount: \$499,677.
- Instrumentation and Computational Modeling for Evaluation of Bridge Substructures Across Waterways, Mississippi Department of Transportation, 10/01/2009-9/30/2011, PI, Wei Zheng Amount: \$150,000.
- Phase I Project for Integrating Intelligent Structure Technology for Refining Bridge Inspection in Mississippi, the Institute for Multimodal Transportation, 07/01/2009-06/30/2010, PI: Wei Zheng, Amount: \$32,000.
- Novel Development of Lab and Course Modules: Integrate Intelligent Structure Technology and Self-Regulated Learning to Inspire Motivated and Strategic Learners in STEM, NSF, 03/01/2009-02/29/2011, PI: Wei Zheng, Co-PIs: Gordon Skelton, Tzusheng Pei, Evelyn Leggette, and Hui-Ru Shih (Dept. of Technology, JSU) Amount: \$149,999
- New Vision for Built Environment-Integration of Nanotechnology into Civil Engineering Undergraduate Curriculum, NSF, 03/01/2009-02/29/2011, PI: Wei Zheng, Co-PIs: Y.L. Mo, Karen Lozano, and Xinqing Ma, Amount: \$199,962

**Dr. Robert Whalin (Partial List)**

Coastal Hazards Center of Excellence; Department of Homeland Security; 2008-2014; PI: Robert Whalin; Amount: \$ 900,000 to 1,000,00 per Year.

Hurricane Forecasting for the Mississippi Coast Using Artificial Neural Network Models and Fully Implicit Domain Decomposition Methods”, Department of Homeland Security (DHS), January 2009-December 2011, PI: Robert W. Whalin, CO-PI(s): Himangshu Das and S. Aliabadi, Amount \$298,587

Advancing the Ike Dike Concept; Texas A&M Univ. at Galveston; 2/11/2013-1/31/2015; PI: Robert W. Whalin, Co-PI: Thomas W. Richardson, \$165,000

Vertical Integration; Army; 2009-2010; PI: Robert W. Whalin; \$ 2,000,000.0

### Prior Years Grants

2003-2004 (Approximate Expenditures)

<b>Project Title</b>	<b>PI</b>	<b>Agency</b>	<b>Amount</b>	<b>Date s</b>
Long-Term Field Studies and Monitoring of Paving Fabric Systems to Reduce Reflective Cracking	F. Amini	MDOT	65,000.00	2004
CSEM Enhancement Program	F. Amini	NSF	90,000.00	2003 - 2004
ESEM for Soil Liquefaction Research	F. Amini	NSF	110,00.00	2003 - 2004
Protective Technology Research	F. Amini	DOD	150,000.00	2003 - 2004
Scientific Visualization of Soil Liquefaction for the Design and Maintenance of Seismic Dams	F. Amini	Navy	50,000.00	2003 - 2004
Research on Potential Applications of the Static and Dynamic Cone Penetrometers in MDOT Pavement Design and Construction	F. Amini	MDOT	35,700.00	2003 - 2004
Research on Applications of Paving Fabrics to Reduce Reflective Cracking	F. Amini	MDOT	37,000.00	2003
Acquisition of Super pave for CE Program Enhancement at JSU	F. Amini	MDOT	125,000.00	2003
Liquefaction at Depth	F. Amini	Stennis Space Center, DOD – Navy	100,000.00	2003
Study of E-Waste Environmental Hazards and Treatment	Y. Li	NSF	80,000.00	2003 - 2004

2004-2005(Approximate Expenditures)

<b>Project Title</b>	<b>PI</b>	<b>Agency</b>	<b>Amount</b>	<b>Date s</b>
Long-Term Field Studies and Monitoring of Paving Fabric Systems to Reduce Reflective Cracking	F. Amini	MDOT	45,000.00	2004 - 2005
CSEM Enhancement Program	F. Amini	NSF	80,000.00	2004 - 2005
ESEM for Soil Liquefaction Research	F. Amini	NSF	80,000.00	2004 - 2005
Protective Technology Research	F. Amini	DOD	45,000.00	2004 - 2005
Scientific Visualization of Soil Liquefaction for the Design and Maintenance of Seismic Dams	F. Amini	Navy	9,700.00	2004 - 2005
Research on Applications of Paving Fabrics to Reduce Reflective Cracking	F. Amini	MDOT	8,000.00	2004 - 2005
Study of E-Waste Environmental Hazards and Treatment	Y. Li	NSF	80,000.00	2004 - 2005
<b>Total</b>				

2005-2006(Approximate Expenditures)

<b>Project Title</b>	<b>Agency</b>	<b>Total Amount</b>	<b>PI/Faculty</b>	<b>Dates</b>
Long Term Monitoring of Pavements	MDOT	9000	F. Amini	2005-2006
CSEM Enhancement Program	NSF	80,000	F. Amini	2005-2006
Protective Technology	DOD	75,000	F. Amini	2005-2006
Study of E-Waste	NSF	80000	Y. Li	2005-2006
DOD IPET	Army	27308	R. Whalin	2005-2006
Advanced Distance Education	DOD	3370	R. Whalin	2005-2006
Vertical Integration	Army	132,795	R. Whalin	2005-2006
Vertical Integration	Army	1,275,000	R. Whalin	2005-2006
Investigation of Metal Spray	NG	45,000	W. Walters	2005-2006
<b>Total</b>		1,738473		



2006-2007(Approximate Expenditures)

<b>Project Title</b>	<b>Agency</b>	<b>Total Amount</b>	<b>PI/Faculty</b>	<b>Dates</b>
Long Term Monitoring of Pavements	MDOT	27,000	F. Amini	2006-2007
CSEM Enhancement Program	NSF	23,000	F. Amini	2006-2007
Protective Technology	DOD	255,000	F. Amini	2006-2007
Study of E-Waste	NSF	80,000	Y. Li	2006-2007
Imtrans	DOT	650,000	M. Qureshi	2006-2007
High Performance and Development of predictive (DOD/DOE) and Characteristics of Structure (LLNL)	DOE/ERD C	609,238	D. Leszczynska	2006-2008
Force Protection	ERDC	60,078	R. Whalin	2006-2007
Vertical Integration	Army	1,275,000	R. Whalin	2006-2007
Investigation of POSS-based Paint	NG	50,000	W. Walters	2006-2007
<b>Total</b>		3,029,316		

2007-2008(Approximate Expenditures)

<b>Project Title</b>	<b>Agency</b>	<b>Total Amount</b>	<b>PI/Faculty</b>	<b>Dates</b>
Long Term Monitoring of Pavements	MDOT	25000	F. Amini	2007-2008
Lake Chico Visitor Center Video Display	USAE	12425	F. Amini	2007
Comparative Slope Stability	BCD	19119	F. Amini	2008
CSEM Enhancement Program	NSF	500	F. Amini	2007-2008
Transportation Research	DOT	16349	F. Amini	2007-2008
Enhancement of JSU Transportation	DOT	25800	F. Amini	2007-2008
Enhanced K-12 Outreach	DOT	10159	Li. Li (Co-PI: F. Amini)	2007-2008
Study of E-Waste	NSF	80000	Y. Li	2007-2008
Experience for Teachers	NSF	20000	Y. Li	2007-2008
Shake Table Acquisition	NSF	10000	W. Zheng	2007-2008
NUE: New Vision	NSF	199,962	W. Zheng	2007-2008
Imtrans	DOT	650,000	D. Smith	2007-2008
Northrop Grumman (NG) Summer Inst.	NG	30,000	R. Whalin	2007-2008
High Performance and Development of predictive	DOE/ERD C	429,238	D. Leszczynska	2007-2009
Investigation of Environmentally Safe	NG	45,000	W. Walters	2007-2008
<b>Total</b>		1,503244		

2008-2009(Approximate Expenditures)

<b>Project Title</b>	<b>Agency</b>	<b>Total Amount</b>	<b>PI/Faculty</b>	<b>Dates</b>
Innovative Levee Strengthening and Testing under Full Scale Overtopping Conditions	DHS	\$ 981,000	PI: F. Amini Co-PI: L. Li	2009-2011
Long Term Monitoring of Pavements	MDOT	24000	F. Amini	2009
Using WiscLEACH to Estimate Groundwater Impacts from Coal Combustion Products in Highway Construction	FHWA – U. of Wisconsin	\$ 29,533	L. Li	2009-2010
Emergency Evacuation Study for the Greater Jackson Area	MDOT	\$ 59,544	W. Feng	2009-2010
NUE-Nanotechnology in Undergraduate Education and Student Research at Jackson State University	NSF	200,000	W. Walters	2009-2011
Novel Development of Lab and Course Modules	NSF	149,999	W. Zheng	2009-2011
Center of Excellence for Natural Hazards	DHS	1,000,000	R. Whalin	2009-2010
Hurricane Forecasting for the Mississippi Coast Using Artificial Neural Network Models and Fully Implicit Domain Decomposition Methods. Department of Homeland Security	DHS	\$298,587	R. Whalin (Co-PI: H. Das)	2009-2010
Imtrans	DOT	650,000	F. Wang	2009-2010
Vertical Integration	Army	40,868	R. Whalin	2009-2010
Vertical Integration	Army	1,933614	R. Whalin	2009-2010
Vertical Integration	Army	1,959000	R. Whalin	2009-2010
CREST	NSF	250,000	D. Leszczynska (Co-PI)	2009-2010

Investigation of CNT-based Paint	Northrop Grumman	50,000	W. Walters	2009-2010
<b>Total</b>		7,626145		

2009-2010(Approximate Expenditures)

<b>Project Title</b>	<b>PI</b>	<b>Agency</b>	<b>Amount</b>	<b>Dates</b>
“Assessment of Pavement Infrastructure”, PI, US Dept of Transportation (USDOT)	F. Wang/F. Amini/L. Li	USDOT	712.5K	201-2012
Evaluation of MDOT’s Distress Thersholds for Maintained Pavement Projects	F Wang/F. Amini	MDOT	120.4K	10/1/09 to 12/31/11
Imtrans	F. Wang	USDOT	650K	2010-2011
Hybrid Nanocomposite Coatings	W. Walters	NSF	100K	7/1/09 to 6/30/12
Instrumentation Computational Modeling for Evaluation of Bridge Substructures Across Waterways	W. Zheng	MDOT	150K	10/1/09 to 12/31/11
Development of High Resolution Storm Surge Models for Guam, Northern Mariana Islands, US Virgin Islands and Puerto Rico	H. Das	ERDC	65K	9/09 to 9/12
Investigation of POSS based Paint Systems for Marine Applications,, Pascagoula, MS	W. Walters	Northrop Grumman Ship Systems	\$5K	06/09-11/09
Piezoelectric Actuators with an Inversion Based Approach	H.R.Shih and W.L.Walters,	JSU University Scholars	\$10K	04/10 – 07/10
Hybrid Nanocomposite coatings for improved impact resistance and bond	W.L. Walters, Q.L. Williams, J. Iroh,	Office of Naval Research	\$900K	07/09-06/12

Durability				
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