

### Sponsored Projects

<i>Project Title</i>	<i>Investigators</i>	<i>Sponsor</i>	<i>Amount</i>	<i>Period</i>
Field performance study of Premark® thermoplastic pavement products	Chehab	Flint Trading, Inc.	\$3,395	06-07
Lab evaluation & specification development of geogrids for highway applications	Chehab	PennDOT	\$125,771	06-07
Evaluation of Fibermat® fiber-reinforced interlayers for pavement rehabilitation	Chehab	Midland Asphalt, Inc	\$26,550	05-07
Durability and Skid Resistance of ALGRIP Welds for Highway Construction Plates	Chehab	Ross Performance Industries	\$24,780	05-06
Evaluation Study of Nyloplast-ADS Inline Drain and Drainage Basin	Chehab et al.	ADS, Inc	\$18,660	06-07
Evaluation of Fasttack® Bituminous Emulsion	Chehab	Whitaker Roads Corporation	\$4,628	06-07
Product Evaluation for Low Volume Roads	Chehab et al.	PennDOT & Industry	Purchase Order	07-11
Fundamental understanding of propellant/nozzle interaction to mitigate erosion for very high pressure missile propellant applications	Many. This project is a large MURI. F. Costanzo is a Co-PI	Office of Naval Research (ONR)	Total: \$5,097,998; Costanzo: \$300,000	05/01/04–04/30/09
Numerical simulation of dynamic fracture in temperature sensitive materials with cohesive zones	F. Costanzo (PI)	Air Force Office of Scientific Research (AFOSR)	\$240,000	12/01/04–11/30/07
Modeling the dynamic response of nanowire structures for integrated nanomechanical biosensor arrays	G.L. Gray (PI) and F. Costanzo (Co-PI)	MRI/MRSEC	\$25,000	09/15/02–09/14/03
Dynamic fracture in temperature sensitive materials with cohesive zones: a discontinuous Galerkin approach	F. Costanzo (PI)	AFOSR	\$191,567	07/01/02–11/30/04

Model-based simulation to engineer nanoporous thin films	F. Costanzo (PI) and G.L. Gray (Co-PI)	AFOSR	\$299,428	01/01/02–12/31/04
Constituent materials properties and belt edge durability of radial tires	ByungLip Lee (PI). F. Costanzo became PI during the last year (2002)	Pirelli Pneumatici S.P.A.	\$146,747	08/15/99–08/14/02
Discontinuous Galerkin FEM for dynamic fracture with cohesive zones	F. Costanzo (PI)	U.S. Army–Army Research Laboratory	\$25,000	01/09/00–01/08/01
Prediction of movement and stresses in curved and skewed bridges	Linzell	Pennsylvania DoT, MAUTC	\$123,787	11/01/06
Portable sign crash test	Linzell	Pennsylvania DoT, MAUTC	\$169,400	06/26/06
Lascor strength testing	Linzell	Office of Naval Research	\$100,000	11/01/05
Collarless construction instrumentation	Linzell	Office of Naval Research	\$38,583	09/01/03-12/01/04
Interstate 99 interim research activities	Linzell	Pennsylvania DoT	\$410,671	08/01/03-10/01/04
Horizontally curved I-girder bridges - Phase 2: model calibration, field testing, analytical study	Linzell	Professional Service Industries /FHWA	\$134,866	09/01/01-09/01/03
Protective technology research, development and implementation in support of DoD force protection needs	Linzell	DoD	\$177,360	07/01/01-09/01/02
Methodology to predict movement and stresses in integral abutments – phase I	Linzell	Pennsylvania DoT	\$375,574	10/01/00-03/01/03
Prediction of movement and stresses in curved and skewed bridges – phase I	Linzell	Pennsylvania DoT	\$349,982	10/01/00-03/01/03
Field monitoring of bridge # 21	Linzell	County of Chester, PA	\$6,409	05/01/00-12/01/00
Penetration power of ultrasonic guided waves for piping and well casing integrity analysis	Lissenden and Rose	Gas Storage Technology Consortium	\$158,281	08/01/07-07/31/08
NDE of polymer-matrix composites and joints using	Lissenden and Rose	NASA Aviation Safety Program	\$359,328	01/01/07-12/31/09

guided wave ultrasonics				
Design in mechanics of materials courses for deeper learning	Lissenden, Van Meter, Vavreck, and Salamon	NSF DUE	\$200,634	01/01/07-12/31/08
Deformation response and life of metallic composites	Lissenden	NASA GRC	\$257,179	12/18/00-12/17/03
CAREER: Repair and retrofit systems for civil infrastructure	Lopez de Murphy	National Science Foundation	\$363,963	01/01/03-02/28/08
An investigation of flexural wave active power sensitivity to crack or slot damage in thin beams	Reichard	Applied Research Lab		
Sense and respond logistics for US Navy ships	Reichard	US Navy		
Support for autonomic logistics	Reichard	USMC		
Shaft crack detection using torsional vibration monitoring	Reichard	EPRI		
Maintenance information backbone	Reichard	US Navy		
Condition based maintenance damage detection technology	Smith and Rose	Center for Rotorcraft Innovation	\$420,000	6/1/2006-5/31/2009
Development and testing of a nonthermal rotor blade anti-icing system	Smith and Rose	Bell Helicopter	\$60,000	6/1/2006-12/31/2006
Wireless sensors w/adv. detection and prognostic capabilities for corrosion health management	Rose	FBS, Inc.	\$71,642	8/1/2006-5/31/2008
A novel self-diagnosis approach to nondestructive inspection of composite structures	Rose	Intelligent Automation, Inc.	\$150,000	10/1/2004-9/30/2006
High frequency guided wave phased array focusing in pipe	Rose	Office of Naval Research	\$100,000	10/30/2003-12/31/2005
A novel wireless system for structural integrity monitoring of aircraft – phase 2	Rose	Intelligent Automation, Inc.	\$190,000	1/15/2003-11/12/2005
Guided wave tuning for enhanced tomographic imaging	Rose	American Society for Nondestructive Testing	\$15,000	8/15/2003-8/14/2004
Guided wave sizing and discrimination for SCC magnetostriction ILI	Rose	Pipeline Research Council International	\$120,000	3/1/2004-12/31/2004

inspection				
Crack detection in green and powdered compacts	Rose	Center for Innovative Sintered Products	\$170,000	7/1/02-6/30/05
Detection and remediation of sinkholes	Schokker	Pennsylvania DoT	\$197,295	04/01/06-10/01/08
Access/weapon denial	Schokker	Joint Non-Lethal Weapons Directorate, Quantico	\$163,463	08/01/06-07/01/07
Evaluation of corrosion resistance for oil well grouts	Schokker	Halliburton	\$50,000	12/01/05-05/01/06
Development of best practices for field corrosion monitoring	Schokker	Pennsylvania DoT	\$54,874	05/01/05-03/01/06
Grout assessment for the Susquehanna turnpike bridge	Schokker	Pennsylvania Turnpike Authority	\$50,000	08/01/04-07/01/06
Nanosensors for Structural Concrete	Schokker	Nanosonics	\$10,000	01/01/04-12/31/04
I-99 HPC initiative: long-term durability of bridge decks – interim funding	Schokker	Pennsylvania DoT	\$89,441	07/01/03-07/01/04
Corrosion and bleed testing of post-tensioning grout	Schokker	Florida DoT	\$128,000	03/01/03-08/01/05
Emulsifiable oils for temporary corrosion protection of post-tensioning tendons	Schokker	Texas DoT	\$66,482	01/01/03-01/01/05
Monitoring of the external post-tensioned retrofit of Frank Lloyd Wright's Fallingwater	Schokker	Western Pennsylvania Conservancy	\$6,000	10/01/00-03/01/03
Interstate 99 high performance concrete initiative: long term durability of bridge decks – Phase I	Schokker	Pennsylvania DoT	\$468,853	10/01/00-03/01/03
In-situ guided wave structural health monitoring system	Tittmann	Intelligent Automation	\$75,000	1/2/2007-12/30/2009
Proof concept testing, ultrasonic array for measuring water level	Tittmann	Bechtel BPMI	\$83,334	6/20/2006-8/30/2007
Development of techniques to precisely measure flowing steam/water	Tittmann	Bechtel BPMI	\$83,334	06/20/06-08/30/07

pressure in high temperature pressurized pipes and vessels				
Intelligent pipeline inspection system	Singha and Tittmann	The Technology Collaborative	\$165,148	09/08/05-02/15/07
Fissile and non-fissile material detection using nuclear acoustic resonance signatures	Tittmann and Lenahan	US DoE	\$180,000	05/17/04-05/16/07
Bechtel plant machinery	Tittmann	Bechtel BPMI	\$240,000	07/06/05-06/30/07
Bechtel ultrasonic transducer	Tittmann	Bechtel BPMI	\$249,000	07/06/05-06/30/07
Cable socket contact force measurement instrument	Tittmann	Bechtel Bettis Inc.	\$112,395	09/28/04-03/28/07
Ultrasonic flow measurement conceptual development	Tittmann	Lockheed Martin Corp.	\$50,000	10/02/05-06/30/07
Development of ultra-high temperature ultrasonic transducer	Tittmann	Bechtel BPMI	\$207,835	03/29/05-12/30/06
Ultrasonic detection methods	Tittmann	Bechtel Bettis Inc.	\$180,000	12/12/05-06/15/06
Laser-based ultrasound	Tittmann	Marine Corps University	\$48,000	09/01/05-01/31/06
Lockheed wave guide	Tittmann	Lockheed Martin Corp.	\$150,000	09/01/05-08/31/06
Lockheed ultrasonic flow	Tittmann	Lockheed Martin Corp.	\$50,000	09/01/05-08/31/06
Ultrasonic pressure detector development	Tittmann	Lockheed Martin Corp.	\$25,000	11/01/04-10/31/06
Ultrasonic pressure/differential pressure detector transducer and interface electronics development	Tittmann	Lockheed Missiles & Space Co.	\$25,000	10/01/04-02/28/05
Development of techniques of precisely measuring temperatures in pressurized pipes	Tittmann	Bechtel Bettis Inc.	\$249,400	09/29/04-07/31/06
Validation of the Lockheed Martin missiles and fire control fast Fourier transform recognition measurement techniques	Tittmann	Lockheed Martin Corp.	\$10,000	06/01/04-06/15/04
In-situ monitoring of	Tittmann	Bechtel Bettis	\$166,566	06/23/04-

materials under hostile environment		Inc.		12/31/05
Long wavelength in-situ testing technique concepts	Tittmann	Bechtel Bettis Inc.	\$24,850	05/28/03-09/24/05
Process control for food freezing	Coupland and Tittmann	US Department of Agriculture	\$235,000	09/01/03-08/31/06
In-situ data analysis and recording	Tittmann	Bechtel Bettis Inc.	\$45,000	05/28/03-12/10/03
Nuclear acoustic resonance-based technique to detect smuggled highly enriched Uranium	Tittmann	Lawrence Livermore Laboratory	\$166,300	11/20/02-06/30/04
Non-lethal technology center	Tittmann	University of New Hampshire	\$150,000	09/01/01-05/01/03
Determination of parameters to support precise ultrasonic measurement of plate movement inside a water filled chamber	Tittmann	Bechtel Corp.	\$121,229	09/27/00-8/27/03
Development of vibration monitoring techniques	Tittmann	Bechtel Corp.	\$84,500	09/29/01-03/03/03
Condition based torsional vibration monitoring of nuclear reactor coolant pumps	Trethewey, et al.	Electric Power Research Institute		6/1/02-12/31/06
Development of force-frequency shifting for low frequency structural vibration testing	Trethewey	National Science Foundation		9/1/02-8/31/06
Failure free operating performance: steam turbine blade health assessment	Trethewey	iMAST		10/1/04-12/31/06
Novel high dielectric constant polymers for energy storage capacitors	Zhang	Office of Naval Research	\$965,000	04/01/04-02/28/08
Unconventional dielectric matls. & struct. for ultra-high perform. pulsed power capacitors	Zhang	DoD MURI	\$5,000,000	05/01/05-04/30/10
Polymer microactuators	Zhang	NIH	\$400,000	08/01/05-07/30/08
Possible giant electrocaloric effect in polar-polymers	Zhang	DoE	\$600,000	08/15/07-08/14/11
Ionic liquids in electro-active devices	Zhang	DoD MURI	\$6,250,000	07/01/07-06/30/12