

**VISTASP M. KARBHARI**  
*Curriculum Vitae*



President  
The University of Texas at Arlington  
Professor, Department of Mechanical and Aerospace Engineering  
Professor, Department of Civil Engineering

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**EDUCATION**

Ph.D. University of Delaware, 1991 (Dissertation Area: Composite Materials)  
ME University of Poona, India, 1985 (Civil, Structures)  
BE University of Poona, India, 1984 (Civil Engineering)

**ACADEMIC POSITIONS**

June 2013 – present: Professor, Department of Mechanical and Aerospace Engineering, and Department of Civil Engineering, The University of Texas at Arlington  
Sept. 2008 – May 2013: Provost and Executive Vice-President for Academic Affairs; Professor, Department of Mechanical and Aerospace Engineering, Department of Civil and Environmental Engineering, University of Alabama in Huntsville  
2009 – May 2013: Professor, Graduate School, Department of Educational Leadership, University of Alabama (courtesy appointment)  
July 2001 – Aug. 2008: Professor, Department of Structural Engineering, & Professor, Materials Science and Engineering Program, UCSD  
July 1997 – June 2001: Associate Professor, Department (Division till 1999) of Structural Engineering, University of California San Diego (UCSD)  
Associate Professor, Materials Sciences Program, UCSD  
Feb. 1995 – June 1997: Assistant Professor, Department of Applied Mechanics and Engineering Sciences, University of California San Diego  
Nov. 1993 – Feb. 1995: Scientist, Center for Composite Materials and Research Assistant Professor, Department of Civil Engineering, University of Delaware  
Dec. 1991 – Nov. 1993: Associate Scientist, Center for Composite Materials and Research Assistant Professor, Department of Civil Engineering, University of Delaware  
March 1991 – Dec. 1991: Visiting Scientist, Center for Composite Materials, University of Delaware

**RESEARCH AND SCHOLARLY EXPERTISE**

Processing and mechanics of composites, deterioration science of polymers and composites, biomaterials, infrastructure renewal and multi-threat mitigation (including blast), sustainability, impact/damage mechanics and crash energy management, nondestructive assessment of materials and structures, wireless sensing, damage prognosis, and structural health monitoring.

Author/Co-author of 200 refereed archival papers in scientific journals, editor/co-editor of 6 books, author and contributor to monographs, over 260 papers in conference proceedings, in addition to other papers, chapters in books, technical reports, and holder of 1 patent.

PI or Co-PI on over \$37M in research projects, in addition to other projects related to institutional and educational objectives

## **ADMINISTRATIVE EXPERIENCE**

### ***President, University of Texas at Arlington***

#### ***Provost and Executive Vice-President for Academic Affairs, University of Alabama in Huntsville***

As the chief academic officer of UAHuntsville and reporting directly to the President, the Provost and EVP for Academic Affairs provides academic leadership, leadership for student affairs and intellectual vision for the University; acts on behalf of the President in his absence; in conjunction with the President and his cabinet develops plans for and administers the University; directs the Deans, CIO, Associate-Provost and directors; develops and administers budgets for academic and student affairs; identifies and develops new resources for the development and enhancement of academic and student affairs including new initiatives and strategic thrust areas.

- Responsible for academic and student affairs
- Responsible for the administration, in conjunction with the Deans, of 5 Colleges (Business Administration, Engineering, Liberal Arts, Nursing, and Science), and the Graduate School in conjunction with the Dean of Graduate Studies
- Responsible for all activities in student affairs through the Dean of Students, including student affairs, student life, student government, counseling, student health/wellness and disability services, intermural sports.
- Responsible for enrollment services and management including student recruitment, financial aid, and records through the Assistant Provost for Enrollment Management
- Responsible for library and information services through the Director of the Library
- Responsible for the computer and network/information services, information and instructional technology of the university through the Chief Information Officer
- Responsible for the Division of Professional and Continuing Studies
- Oversee all academic support services including the Office of Institutional Research, Student Success Center, the Office of International Programs and Services, Testing Services, Study-Abroad, Advising, the Institute for Science Education (focused on school level STEM efforts and STEM teacher training in middle and high schools), and the Honors Program.

#### ***Major Achievements and Initiatives:***

- Served as the senior administrator for UAHuntsville from March 2011 to November 2011 (time period between when the previous President resigned and a new President was appointed) with responsibility for all day-to-day operations of the University. Ensured stability, developed and submitted university budget request in conjunction with the CFO for state allocation resulting in a 1.5% increase, completed annual capital plan, developed university budgets for the 11-12 fiscal year, and led university development efforts. The Chancellor of the UA System (with offices in Tuscaloosa) served as the Interim President.
- Raised funds for the development of scholarships for students, fellowships for faculty, new endowed Eminent Scholar Chairs, and an increase in discretionary funds through increases in the university endowment.
- Worked closely with local legislators to enhance an appreciation for the University's role in economic and workforce development and facilitated the addition of multi-million dollar allocations in special funds directed by the legislature to the University for specific programs in

robotics and aerospace engineering, and for new construction of academic and research buildings.

- Integration of academic and student affairs and resolution of concerns regarding management of student affairs (This responsibility was added to my portfolio about a year after my arrival at UAHuntsville due to administrative and financial concerns in that division)
- Establishment of the Student Success Center to integrate and substantially enhance student retention and progression, academic tutoring and coaching services, peer assisted study sessions, co-ops, internships and career development services, and the writing center. The motivation and driving force was to increase retention and student success through individualized and small group based interaction and attention. The 6-year graduation rate has already increased by 4% between 2008 and 2012, and the number of baccalaureate degrees granted has increased by 20% from 2008-2009 to 2012.
- Initiation of a formalized freshman experience program aimed at retention and student success. This resulted in a 5% increase in freshman retention and success.
- Increase in graduate enrollment of 16% since the 2007-2008 academic year with 13% and 22% increases in Masters and Doctoral degrees granted, respectively.
- Initiation of podcasting on campus as well as an increase in courses offered through distance learning, and the development of a centralized structure to assist in the use of electronic media for delivery of instruction and instructional materials.
- Reorganized budgeting processes in Academic Affairs to enable budget development at the College level to allow for larger budgets with more fiscal responsibility at the College level and for a focused process for growth.
- Implemented a new model for offering instruction in summer to enable increased course offerings which resulted in a 25% increase in net revenue (after expenses) over that in 2008.
- Implemented initiative for the upgrade of campus wide IT and network services through the development of a comprehensive \$25M upgrade project plan for the campus.
- Together with University leadership, enabled a rapid recovery of the University after the tragic shootings on February 12, 2010. Led successful university efforts to gain federal funding from DoEd and DoJ as well as from other sources. As the senior administrator on campus, led efforts to facilitate the recovery after the tornadoes in May 2011.
- Built a leadership team through the recruitment of a new Vice-President for Research, two academic Deans (Business Administration, and Engineering), CIO, Dean of the Graduate School, Associate Provost for Undergraduate Education and Institutional Effectiveness, Assistant Provost for Enrollment Management, and Dean of Students/Associate Vice-President for Student Affairs.
- Increased the overall number of faculty since 2008. Enabled hiring of over 80 faculty since 2008, including from separations/retirements and the addition of new faculty lines in all Colleges. Facilitated the recruitment and hiring of senior faculty/eminent scholars and the successful completion of cluster hires in Space-Physics and Supply-Chain/Logistics, as well as strategic increases in Nursing, and Mechanical and Aerospace Engineering.
- Established an academic leadership development program to strengthen leadership and to develop future in-house leadership with annual workshops for Deans, Associate/Assistant Deans, Chairs, Associate Chair and unit heads. Faculty development webinars are hosted regularly through the year for faculty and staff on various topics related to teaching excellence, innovations in instructional technology, engaging and developing student success, managing units and leadership building. A new travel fund was established in the Provost's Office with new funds to enable all faculty to be funded to travel to a conference/workshop once every two years to enable enhancement of scholarship and faculty development.
- Worked with the Vice-President for Research to enable an increase in sponsored research expenditures from \$65 million in 2008 to \$85 million in FY 2011, with awards being over \$100 million.

- Enabled growth in Academic Affairs (College Budgets and Number of Faculty) through development of new resources, efficiency increases and leveraging despite permanent reductions in state allocations of over 25%, in addition to proration for two consecutive years. Faculty and staff have been provided raises every year since 2010 despite cuts in state allocation.
- Facilitated, in conjunction with the Academic Deans, and successfully obtained approval for, several new programs through the Board of Trustees and the Alabama Commission on Higher Education, including
  - MS and PhD in Modeling and Simulation
  - MS in Information Assurance and Security (jointly offered by the Colleges of Business Administration, Engineering and Science)
  - MA in Organizational Psychology
  - MS and PhD specializations in Data and Information Sciences
  - MS and PhD in Aerospace Systems Engineering
  - BFA to augment the current BA in studio art
  - BS in Individualized Science Studies
  - MS in Earth System Sciences
  - MS in Integrated STEM Education (for in-service teachers)
  - MEd in Differentiated Instruction
  - BS in Economics and Computational Analysis
  - Certificate Programs in the College of Business Administration based on the needs of Redstone Arsenal and the local community
  - Specializations and minors in Entrepreneurship

Each of these was based on the ability to recruit and support new students through local interest (Army, NASA, corporate entities) and to meet workforce needs. Planning and initiation grants for a number of these were obtained from local corporations and Redstone Arsenal.

- In conjunction with the Dean of the College of Engineering and faculty in the MAE Department, successfully initiated a unique state-wide collaboration leading to the formation of a consortium comprised of UAHuntsville, the University of Alabama and Auburn University in Aerospace Engineering to leverage resources and create a collaborative academic group, which also enabled the establishment of stand-alone MS and PhD programs in Aerospace Systems Engineering at UAHuntsville.
- In conjunction with university leadership, assisted in the facilitation of an interdisciplinary program in Sustainability including the development of academic and research links with CATHALAC in Panama, and a unique agreement between the University of Rostock (in Mecklenburg-Vorpommern, Germany) for academic and research interactions including leveraging of ties and resources between the German Aerospace Agency, DLR, and the State of Mecklenburg-Vorpommern.
- Initiated focused cohort based recruitment in China and India for the College of Business Administration and the College of Engineering.
- Increased interaction with the US Army, NASA and corporate entities related to academic programs, continuing education, scholarships, internships and co-op opportunities.
- Developed collaboration between UAHuntsville and the Oakridge National Laboratory to enhance educational and research opportunities for students and faculty. UAHuntsville is the only University to have a special permanent ORNL office and presence on campus.

***University of California San Diego – Major University Level Activities***

- *Member, UCSD Program Review Committee, 2007-2008* - principal advisory committee to the Senior Vice-Chancellor-Academic Affairs, for “all instructional, research, and public service programs of the general campus, as well as supporting programs, such as libraries and academic

computing, provides recommendations on faculty and TA FTE allocations, operating budget issues, and priorities for capital improvement.”

- *Member, Senate Council, 2001–2002, 2007-2008* - The council oversees the business of the academic senate and monitors and adjusts the work of senate committees, performs duties according to policy on transfer, consolidation, disestablishment and discontinuance of academic programs.
- *Member, Senate Administration Council, 2001–2002, 2007-2008* - The committee serves as the forum for discussion between the senate and the council and deliberates on matters requiring coordination between the faculty senate and the university administration.
- *Chair, Graduate Council, 2007-2008* - Senate committee with responsibility for setting policy and standards for all graduate programs at UCSD, regulating the work of the graduate division, advising the Chancellor regarding relations with educational and research foundations, supervising all forms of graduate instruction and research, and administering the establishment of departments, schools and organized research units. The committee has the administrative function of setting policy, which is then administered by the Dean of Graduate Studies.
- *Administrative Internship in the Office of Graduate Studies and Research: 2006* - This was a special position created under the Vice-Chancellor for Research and Dean of Graduate Studies Richard Attiyeh to provide experience in administration and policy. Responsibilities also included taking part in the external review of graduate departments and programs.
- *Member, Capital Outlay and Space Advisory Committee (COSAC), 2006-2008* - I served as the faculty representative on the committee constituted of Vice-Chancellors of UCSD and charged with planning and advising the UCSD Chancellor on aspects related to capital outlay, requests to the State regarding capital projects, and long-range space planning and allocation activities. The committee reviews all project requests for State funds and recommends a rank-ordered five-year program to the UCSD Chancellor and the Office of the President of the University of California.
- *Member, Western Association of Schools and Colleges (WASC) 2005-2009 Accreditation Reaffirmation UCSD Senate-Administration Advisory Committee, 2004-2008*
- *Member, Executive Committee – Material Science and Engineering Program, 1999 - 2008* - The executive committee is responsible for administration and enhancement of the graduate level, inter-departmental Materials Science program. The committee sets curriculum, core courses, standards for admissions and passing of the qualifying and senate examinations, and represents the Materials Sciences program in discussions with Deans and the Office of Graduate Studies and Research.
- *Co-Chair, UCSD Task Force on Enrollment Management, 2001 – 2006* - Special task-force formed to study issues and develop strategies related to growth and approach to steady state as a consequence of the increase of the UCSD student population by 2010 as a result of the University of California’s new compact with the State. Critical issues relate to streaming of incoming freshmen, distribution among the divisions, transfer of students between majors, effect of impactedness in popular or facility-intensive majors, inclusion of transfer students, effect on minorities and underrepresented populations, and effect of growth in changing budget climates while ensuring maintenance of high levels of education and research excellence.
- *Chair, Committee on Educational Policy (CEP), 2001-2002, Member, CEP 1999-2002* - The committee has control concerning matters of educational policy at UCSD; it approves programs and college plans, considers proposals for the establishment, approval or disapproval of new departments, schools and organized research units, changes in existing programs, establishes policies and procedures related to education, conducts periodic reviews of programs. During my year as chair, in addition to routine business and program reviews, CEP established procedures for enrollment management in programs impacted by over-enrollment, initiated development of a new UCSD policy on academic integrity, approved the establishment of an inter-disciplinary program in Bioinformatics (requiring cross-disciplinary coordination), and oversaw the establishment of the 6th undergraduate college dedicated to interdisciplinary exploration of Culture, Art and Technology in an integrated community environment. In addition we also continued deliberations on the role of on-line instruction at UCSD, aimed at development of a strategy to maximize the potential of on-line

learning while ensuring usage that is consistent with faculty responsibility and the educational mission of the campus.

***University of California San Diego – Major School of Engineering Level Activities***

- Member, Energy, Environment and Sustainability (EES) Committee, 2007-2008
- Member, Jacobs School of Engineering Committee for UC San Diego Educational Collaboration, with DOE/Los Alamos National Laboratory, and co-principal author of Jacobs School of Engineering plan for development of educational interaction and degree on damage prognosis with the Los Alamos Laboratories 2003-2004.
- Member, Jacobs School of Engineering Committee on Academic Integrity, 2000-2001
- Member, Jacobs School of Engineering ABET Committee, 2000-2001
- Member, Aerospace Engineering Executive Committee, 2001

***University of California San Diego – Major Department level Activities***

- Chair, Department of Structural Engineering, Jan. 2002- July 2003
- Vice-Chair, Department of Structural Engineering, 1999-2001, and Vice-Chair: Operations, University activities, Graduate Studies and Research, Department of Structural Engineering 2007-2008. Appointed to assist the then new chair, Prof. Gilbert Hegemier, in revitalizing department and resolving functional issues.
- Vice-Chair, Division of Structural Engineering, AMES, 1998-1999
- Chair, Department ABET Committee, and Member JSOE ABET Committee, 2000-2001

**AWARDS AND HONORS**

*(Keynote, distinguished and plenary lectures are listed in the overall list of Presentations)*

- Outstanding Scholar/Administrator Award, Indian American Friendship Council, Dallas, TX, May 2014
- GDIACC Award, Dallas, TX, 2014
- Fellow, American Society of Civil Engineers, 2014
- Fellow, International Society for Structural Health Monitoring of Intelligent Infrastructure, 2014
- Fellow, National Academy of Inventors, 2013
- Fellow, ASM International, 2011
- Alabama-India Business Partnership, Award for Extraordinary Contributions to Science, Technology, Education and Economic Development for the State of AL, Dec. 2010
- California Department of Toxic Substance Control, California Green Chemistry Science Advisory Panel Recognition, June 2008
- Fellow, International Institute for FRP in Construction (IIFC), 2006
- 2006 IIFC President's Award
- 2006 Best Paper Award, European Workshop on Structural Health Monitoring
- 2003 ASNT Faculty Grant Award
- Best Paper Award, High Temperature and Environmental Effects Division, American Society of Composites, 2000
- Best Paper Award, Composites Institute International Composites Exposition, 1999
- Powell Faculty Fellowship, 1997 - 1999
- CAREER Award, National Science Foundation, 1997
- Civil Engineering Research Foundation Charles Pankow Award for Innovation, Innovative Concept Category, 1996
- Best Paper Award in Materials, 1992 ASM/ESD Advanced Composites Conference

## **HONOR SOCIETIES**

Golden Key International Honor Society (Honorary Member)  
Phi Kappa Phi Honor Society  
Tau Beta Pi National Honor Society

## **PROFESSIONAL SOCIETY MEMBERSHIPS**

- American Concrete Institute (ACI)
- American Society of Civil Engineers (ASCE)
- ASM International
- International Institute for FRP in Construction (IIFC)
- International Society for Structural Health Monitoring of Intelligent Infrastructures (ISHMII)
- Society for the Advancement of Materials and Process Engineering (SAMPE)

## **JOURNAL AND PROFESSIONAL SOCIETY EDITORIAL BOARDS**

- Associate Editor, Journal of Civil Structural Health Monitoring (2010-present)
- Editorial Board Member, Int. J. of Sustainable Materials and Structural Systems (2010-present)
- Editorial Board Member, Structural Engineering and Mechanics (2009-present)
- Editorial Advisory Board, Recent Patents on Materials Science, (2008-present)
- Editorial Board Member, ASTM Journal for Testing and Evaluation (2007-present)
- Editorial Board Member, Composite Structures (2004-present)
- American Editor, International Journal of Materials and Product Technology (1994 –present)
- Editor, International Institute for FRP in Construction (2004-2007)
- Editorial Board Member, Journal of Thermoplastic Composite Materials (1994 -1998)
- Publications Committee, ASCE Technical Council on Cold Regions Engineering (1993-1998)
- Editorial Board Member, Processing of Advanced Materials (1993 -1996)

## **CONFERENCE/WORKSHOP ORGANIZATION (As Chair/Co-Chair)**

- 3rd International Conference on Durability and Field Applications of Fiber Reinforced Polymer Composites for Construction (CDCC 2007), May 22-24, Quebec City, Canada.
- Workshop on Prediction of the Degradation of Advanced Materials for Emerging Facilities and Equipment, US-Army ERDC-CERL, Champaign, IL, August 31, 2005 (Co-Chairs: P.K. Dutta and V.M. Karbhari)
- Workshop on Structural Health Monitoring and Diagnostics of Bridge Infrastructure, San Diego, CA, March 7-8, 2003 (Co-Chairs: V.M. Karbhari and C. Sikorsky)
- 2nd International Conference on Durability of Fibre Reinforced Polymer (FRP) Composites for Construction, Montreal, Canada, May 29-31, 2002 (Co-Chairs: L. Bank, B. Benmokrane, V.M. Karbhari)
- 45th International SAMPE Symposium, Long Beach, CA, May 2000 (Co-Chairs: S. Loud, V.M. Karbhari, D.O. Adams and A.B. Strong)

## **EXTERNAL REVIEWS (Programs and Proposals)**

- Engineering and Physical Sciences Research Council, UK
- Israel Science Foundation
- National Science and Engineering Research Council of Canada, Expert Panel for Mid-Term Review of the ISIS Network, Network of Centers of Excellence of Canada, 2005
- National Science Foundation
- Oregon Transportation Research and Education Consortium

- Research Committee, City University of Hong Kong
- Research Grants Council and University Grants Committee, Hong Kong
- United Arab Emirates University
- US Army Cold Regions Research and Engineering Laboratory
- US Civilian Research and Development Foundation (CRDF) Georgian-US Bilateral Grants Program

#### **SERVICE ON BOARDS AND ADVISORY BOARDS**

- Arlington Chamber of Commerce, Executive Committee (2013-)
- Center for Innovation, Board Member (2013-)
- Dallas Regional Chamber (2013-)
- Fort Worth Chamber, Ex-Officio Board Member (2013-)
- North Texas Commission, Board Member (2013-)
- North Texas Leaders and Executive Advocating Diversity (LEAD), Board Member (2013-)
- Texas International Education Consortium, Board Member(2013-)
- Sunbelt Athletic Conference, Board Member (2013-)
- Member, Board of Directors, Alabama India Business Partnership (2009-2013)
- Advisory Committee Member, Cerritos Community College Board – Composites Area (1999-2004)

#### **REVIEWER FOR ACADEMIC JOURNALS**

*This only lists journals for the past 3 years*

- ACI Materials Journal
- Advances in Civil Engineering
- ASCE Journal of Structural Engineering
- ASTM Journal of Testing and Evaluation
- Composites A
- Composite Structures
- Engineering Failure Analysis
- Engineering Structures
- Experimental Techniques
- ICE Construction Materials
- ICE Engineering and Computational Mechanics
- International Journal of Impact Engineering
- International Journal of Structural Stability and Dynamics
- ISRN Civil Engineering
- Journal of the AWWA
- Journal of Applied Oral Science
- Journal of Applied Polymer Science
- Journal of Civil Structural Health Monitoring
- Journal of Composite Materials
- Materials Chemistry and Physics
- Mechanical Systems and Signal Processing
- Structural Engineering and Mechanics
- Structure and Infrastructure Engineering
- Recent Patents on Materials Science



## **COURSES TAUGHT**

*These only list courses for which I was the primary instructor*

### ***At the University of Delaware***

- CIEG 211: Statics
- CIEG 212: Strength of Materials
- CIEG 406/606: Structural Materials

### ***At the University of California San Diego***

- AMES 121A: Statics
- AMES 121B: Dynamics
- AMES 130A: Solid Mechanics I
- AMES 130B: Solid Mechanics II: Theory of Elasticity
- AMES 138: Design of Composite Structures
- AMES 207: Composites Manufacturing
- AMES 291: Mechanics and Design Seminar
- SE 2: Structural Materials
- SE 87: Freshman Seminar
- SE 101A; Statics
- SE 101B: Dynamics
- SE 142: Design of Composite Structures
- SE 207: Topics in Structural Engineering – Advanced Composite Structures
- SE 207: Topics in Structural Engineering – Composites – Mechanics and Failure
- SE 250 Design of Composite Structures
- SE 251 Processing Science of Composites
- SE 290: Earthquake Engineering Seminar
- SE 291: Advanced Composites Seminar

### ***At the University of Alabama in Huntsville***

- MAE 695: Selected Topics – Mechanics of Composite Materials
- MAE 695: Selected Topics – Composites: Materials and Manufacturing
- MAE 678: Mechanics of Composite Materials
- Introduction to Composite Materials and Mechanics (offered through the Division of Professional and Continuing Studies)

## GRADUATE THESES CHAIRED

(The list only includes students for whom I was the principal advisor)

### At the University of Delaware

- *Hugh C. Boyle*, Bond Strength of Fiber Reinforced Composite Bars to Concrete, Master of Civil Engineering, Summer 1993.
- *Diane L. Wright*, “Activity-Based Analysis of the Unit-Level Complexity of Resin Transfer Molded Composites, Master of Science in Accounting, Spring 1994.
- *Mehernosh P. Engineer*, Use of Composites for Rehabilitation of Concrete Beams: Processing, Performance and Durability, Master of Materials Science and Engineering, Fall 1994.
- *Michael A. Sasdelli*, Design and Manufacture of RTM Composites With Molded-In Metal Inserts, Master of Mechanical Engineering, 1995.
- *Ian Howie*, A Study n the Use of Composite Wraps for the Rehabilitation of Deteriorated Concrete Columns, Master of Civil Engineering, Fall 1995.
- *Bryan P. Lennon*, An Investigation on the Use of Waste Injection Molding Pellets in Portland Cement Concrete, Master of Civil Engineering, Fall 1995.
- *Richard W. Rydin*, Using the Drop Weight Impact Tower to Assess Impact Resistance of FRP Composite Plates, Doctor or Philosophy in Materials Science, Spring 1996.

### At the University of California San Diego

- *Lei Zhao*, Characterization of Deck-to-Girder Connections in FRP Composite Superstructures, Doctor of Philosophy in Engineering Sciences, 1999.
- *Raymond P. Grimes*, Optimizing the Development Process for a Radiation-Hardened Conformal Coating, Master of Sciences in Applied Mechanics and Engineering Sciences, 1999.
- *Alvaro Vasquez*, The Use of Carbon Fiber Reinforced Polymer Strips for the External Strengthening of Slabs, Master of Science in Structural Engineering, 1999.
- *Maria J. Cordovez*, DEA Characterization of Cure and Environmental Degradation of Polymer Composites, Master of Science in Structural Engineering, 2000.
- *Megan E. Martyak*, An Experimental and Analytical Evaluation of Splice Joints in Concrete-Filled Carbon Fiber Reinforced Shells, Master of Science in Structural Engineering, 2000.
- *Jorge A. Rivera*, Characterization of Freeze and Freeze-Thaw Effects on Fiber Reinforced Polymer Composites for Retrofit and Strengthening, Master of Science in Structural Engineering, 2000.
- *David J. Manis*, Evaluation of a Manufacturing Cost Reduction Method Using Process Integration, Master of Science in Applied Mechanics and Engineering Sciences, 2002.
- *Wellington H-H. Chu*, Investigation of Short-Term Aqueous Exposure on Pultruded E-Glass/Vinylester Composites, Master of Science in Structural Engineering, 2002.
- *Henning Kaiser*, Assessment of Defect Criticality and Non-destructive Monitoring in CFRP-Rehabilitated Civil Structures, Master of Science in Structural Engineering, 2002.
- *Paul M. Schuman*, Investigation on Mechanical Anchorage for Shear Rehabilitation of Continuous Reinforced Concrete T-Beams With CFRP Externally Bonded Stirrups, Master of Science in Structural Engineering, 2002.
- *April L. Gilbert*, Nonlinear Finite Element Modeling of Fiber Reinforced Polymer Shells Infilled With Concrete, Master of Science in Structural Engineering, 2002.
- *David C. Lee*, Rehabilitation of Large Diameter PCCP With Composites, Master of Science in Structural Engineering, 2002.
- *Matthias Stein*, Fuzzy Logic Based Approach to FRP Retrofit of Columns, Master of Science in Structural Engineering, 2002.
- *Bruno E. Struck*, Procedure to Select and Implement A Measuring Device for Turbine Engine Airfoils, Master of Science in Applied Math and Engineering Sciences, 2003.

- *Rebecca A. Walker*, Time Degradation of Composite Jackets Used in Seismic Retrofit of Bridge Columns, Master of Science in Structural Engineering, 2003.
- *Marshall P. Carman*, Methodology for Predicting Reliability of Fiber Reinforced Polymer Bridge Decks, Master of Science in Structural Engineering, 2003.
- *Robert Conway*, Blast Response of Bridge Decks, Master of Science in Structural Engineering, 2004.
- *Rajiv Navada*, An Experimental Assessment of Defect Criticality in FRP Rehabilitated Concrete Using a Fracture Mechanics Approach, Master of Science in Structural Engineering, 2004.
- *Maria A.D. Abanilla*, Pyysico-Mechanical Characterization of T700 Based Carbon/Epoxy Systems for Infrastructure Rehabilitation, Master of Science in Structural Engineering, 2004.
- *Sara C. Kremmidas*, Improving Bridge Stay Cable Performance Under Static and Dynamic Loads, Doctor of Philosophy in Structural Engineering, 2004.
- *Vi T. Nguyen*, Durability of E-Glass/Vinylester Composites in a Marine Environment, Master of Science in Structural Engineering, 2004.
- *Ross B. Cussen*, Modular FRP Composite Blast Wall System Test and Analysis, Master of Science in Structural Engineering, 2004.
- *Christina Eng*, The Use of Mechanical Anchorage in FRP Strengthening of Reinforced Concrete Beams, Master of Science in Structural Engineering, 2004.
- *Paul M. Schuman*, Mechanical Anchorage for Shear Rehabilitation of Reinforced Concrete Structures With FRP: An Appropriate Design Approach, Doctor of Philosophy in Structural Engineering, 2004.
- *Hyunjung Yang*, Investigation of Off-Axis Crush of Conical Composite Frusta, Master of Science in Structural Engineering, 2005.
- *Lijuan Cheng*, Development of a Steel-Free FRP Concrete Slab-on-Girder Modular Bridge System , Doctor of Philosophy in Structural Engineering, 2005.
- *Luke S. Lee*, Monitoring and Service Life Estimation of Reinforced Concrete Bridge Decks Rehabilitated With Externally Bonded Carbon Fiber Reinforced Polymer (CFRP) Composites, Doctor of Philosophy in Structural Engineering, 2005.
- *Devon A. Lumbard*, Durability Assessment and Preliminary Reliability Estimation of Thermo-Chemical Effects on Fiber Reinforced Polymer Composites, Master of Science in Structural Engineering, 2005.
- *Jason Delaney*, The Assessment of Aspects Related to Defect Criticality in CFRP Reinforced Concrete Flexural Members, Master of Science in Structural Engineering, 2006.
- *Rebecca Atadero*, Development of Load and Resistance Factor Design for FRP Strengthening of Reinforced Concrete Structures, Doctor of Philosophy in Structural Engineering, 2006.
- *Hong Guan*, Vibration-Based Structural Health Monitoring of Highway Bridges, Doctor of Philosophy in Structural Engineering, 2006.
- *Kumar Ghosh*, Assessment of FRP Composite Strengthened Reinforced Concrete Bridge Structures at the Component and Systems Level Through Progressive Damage and Non-Destructive Evaluation (NDE), Doctor of Philosophy in Structural Engineering, 2006.
- *Padmavathi Surathi*, Hygrothermal Effects on Durability and Moisture Kinetics of Fiber-Reinforced Polymer Composites, Master of Science in Structural Engineering, 2006.
- *Michael Lewis*, Experimental Verification of the Influence of Time-Dependent Material Properties on Long-Term Bridge Characteristics, Master of Science in Structural Engineering, 2006.
- *Christina Nishimoto*, Comparative Energetics of Blast on Modular FRP Filled Systems, Master of Science in Structural Engineering, 2006.
- *Joanne Mitchell*, Rapid Rehabilitation Using FRP Composite Materials, Master of Science in Structural Engineering, 2006.
- *Paul Clark*, Dissolution of Mega-Voids in Resin Transfer Molding, Doctor of Philosophy in Structural Engineering, 2007.

- *Matt Wrosch*, Effects of Radiation Source on the Durability Characteristics of UV Curable Adhesive for Optoelectronic Applications, Master of Science in Materials Science and Engineering, 2007.
- *Ali Shirazi*, Damage Assessment and Progression Using IR Thermography, Master of Science in Structural Engineering, 2007.
- *Corey Love*, Cathodic Disbondment Resistance With Reactive Ethylene Terpolymer Blends and Composite Coatings, Doctor of Philosophy in Materials Science and Engineering, February 2008.
- *Andrea Gillian Cutter*, Development and Characterization of Renewable Resource-Based Structural Composite Materials, Master of Science in Structural Engineering, April 2008.
- *Patrick Wilcox*, Reliability Based Assessment of FRP Rehabilitation of Reinforced Concrete Girders, Master of Science in Structural Engineering, June 2008.
- *Alicia Danyeur*, Insitu Expanding Foam Based Carbon/Epoxy Sandwich Jackets for Column Retrofit, Master of Science in Structural Engineering, July 2008.
- *Sung-Jun Jin*, Reliability-Based Characterization of Prefabricated FRP Composites for Rehabilitation of Concrete Structures, Master of Science in Structural Engineering, July 2008
- *Susan Slater*, Development of a Rapid Design Procedure for Emergency Repair of Bridge Columns Using Fiber-Reinforced Composites, Master of Science in Structural Engineering, August 2008.
- *Stephanie Svetlik*, An Investigation of the Hygrothermal Degradation of an E-Glass/Vinylester Composite in Humid and Immersion Environments, Doctor of Philosophy in Structural Engineering, August 2008.
- *Griffin Brungraber*, Long-Term Performance of Epoxy-Bonded Rebar-Couplers, Doctor of Philosophy in Structural Engineering, June 2009.
- *Sung Dae Kim*, Prediction of Long-Term Prestress Loss in Concrete Box Girder Bridges, Doctor of Philosophy in Structural Engineering, June 2009.
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- 206 H. Guan, V.M. Karbhari and C. Sikorsky, "Health Monitoring of a FRP Composite Bridge Augmented by Use of Web Based and Wireless Technologies," Proceedings of the 2004 Conference of the International Association for Bridge Maintenance and Safety, IABMAS '04, October 18-22, 2004, Kyoto, Japan 8 pp. (also in abstract book pp. 720-721)
- 207 M.F. Barrios and V.M. Karbhari, "Corrosion Mitigation – Can Composite Wraps Serve As An Effective Mechanism," Proceedings of SAME 2004, San Diego, November 15-18, 2004, 12 pp.
- 208 F. Matta, V.M. Karbhari, D. Tinazzi and R. Vitaliani, "Static and Fatigue Behavior of Steel/CFRP Adhesive Bonds for the Rehabilitation of Metallic Bridges," Proceedings of Meccanica delle Strutture in Maratura Rinforzate con FRP-materials: Modellazione, Sperimentazione, Progetto, Controllo, Venice, Italy, December 6-8, 2004, pp. 411-420.
- 209 H. Guan, V.M. Karbhari and C.S. Sikorsky, "Time-Domain Output Only Modal Parameter Extraction and its Application," Proceedings of the 1st International Operational Modal Analysis Conference, Copenhagen, Denmark, April 26-27, 2005
- 210 R.A. Atadero and V.M. Karbhari, "Determination of Design Values for FRP Used for Strengthening," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 16 pp.
- 211 K.K. Ghosh and V.M. Karbhari, "Evaluation of Environmental Effect on FRP/Concrete Bond," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 15 pp.
- 212 H. Niu, J. Delaney and V. Karbhari, "Effect of Defects on Performance on CFRP Strengthened RC Beams," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 13 pp.
- 213 L. Cheng and V.M. Karbhari, "Fatigue Behavior of a Steel-Free FRP-Concrete Modular Bridge Deck System," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 14 pp.
- 214 M.F. Herrador and V.M. Karbhari, "Interaction Between Steel Reinforcement Corrosion and CFRP Jacketing in Structural Concrete," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 11 pp.
- 215 L.S. Lee and V.M. Karbhari, "Service Life Based Design of FRP Composite Rehabilitations," Proceedings of SAMPE 2005, Long Beach, May 1-5, 2005, 15 pp.
- 216 V.M. Karbhari, "Reliability and Durability of Polymer Matrix Composites Used in Renewal of Offshore and Polar Structures," Proceedings of the Fifteenth International Offshore and Polar Engineering Conference, Vol. IV, Seoul, Korea, June 19-24, 2005, pp. 441-448.
- 217 M.A. Abanilla, V.M. Karbhari and Y. Li, "Development of Long-Term Durability and Design Parameters for Carbon/Epoxy Materials Used in External Rehabilitation of Concrete," Proceedings of the Third International Conference on Construction Materials, Vancouver, Canada, August 2005, 12 pp and pg 393 in the book of abstracts (Invited Paper)

- 218 R.A. Atadero and V.M. Karbhari, "Consideration of Time-Dependent Degradation in the Development of Probabilistic Based Design of FRP Strengthening," Proceedings of the American Society for Composites Twentieth Technical Conference, Philadelphia, PA, September 2005, 18 pp.
- 219 K.K. Ghosh and V.M. Karbhari, "Assessment of FRP Rehabilitation at a Systems Level Through Progressive Damage and NDE," Proceedings of the American Society for Composites Twentieth Technical Conference, Philadelphia, PA, September 2005, 13 pp.
- 220 C.T. Love, G. Xian and V.M. Karbhari, "Adhesion and Characterization of High Density Polyethylene/Elvaloy Blends for Hot Melt Coating of Steel," Proceedings of the American Society for Composites Twentieth Technical Conference, Philadelphia, PA, September 2005, 15 pp.
- 221 Q. Yang, L. Lee, D.A. Lumbard and V.M. Karbhari, "Durability Study of Hygro-Thermal Effects on Epoxy and Wet Layup Carbon/Epoxy Composites," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-502, 8 pp. (Also Page 26 of the abstracts book).
- 222 C. Love, G. Xian and V.M. Karbhari, "Hot Melt Bonding Anti-Corrosion Coatings to Steel With Application for Rehabilitation," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-503, 9 pp. (Also Page 27 of the abstracts book).
- 223 J. Delaney and V.M. Karbhari, "Determination of Defect Criticality and the Resulting Performance Effects of CFRP Strengthened RC Beams," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-504, 9 pp. (Also Page 28 of the abstracts book).
- 224 P. Surathi and V.M. Karbhari, "Hygrothermal Effects on Durability and Moisture Kinetics of Fiber-Reinforced Polymer Composites," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-505, 9 pp. (Also Page 29 of the abstracts book).
- 225 R. Atadero and V.M. Karbhari, "Development of Reliability Based Design Procedures for FRP Composite Strengthening of Bridge Structures," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-507, 9 pp. (Also Page 31 of the abstracts book).
- 226 L.S. Lee, V.M. Karbhari and C. Sikorsky, "Integrity and Effectiveness of Watson Wash Bridge Deck Rehabilitation Using CFRP Composites," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-508, 8 pp. (Also Page 32 of the abstracts book).
- 227 K.K. Ghosh and V.M. Karbhari, "Progressive Damage and NDE of FRP Rehabilitation at Component and System Level," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 03-510, 9 pp. (Also Page 34 of the abstracts book).
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- 229 S.A. Youakim and V.M. Karbhari, "Prestress Losses in Cast-In-Place Post-Tensioned Bridges: Analysis and Comparisons With Design Codes," Proceedings of the Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31-Nov. 1, 2005, Paper 05-501, 10 pp. (Also Page 46 of the abstracts book).
- 230 L. Cheng and V.M. Karbhari, "Steel-Free Hybrid FRP Stiffened Panel-Concrete Deck System," Proceedings of FRPRCS-7, Kansas City, Nov 7-9, 2005, 12 pp.

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- 234 G. Xian and V.M. Karbhari, "DMTA Characterization of Moisture Aged Epoxy," Proceedings of SAMPE '06 (Volume 51 of SAMPE Conference Proceedings), Long Beach, Ca, April 30-May 4, 2006, 9 pp.
- 235 C.T. Love and V.M. Karbhari, "High Density Polyethylene/Reactive Ethylene Terpolymer Composites for Strengthening Steel Structures," Proceedings of SAMPE '06 (Volume 51 of SAMPE Conference Proceedings), Long Beach, Ca, April 30-May 4, 2006, 10 pp.
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- 238 X.P. Qing, Z. Wu, F-K. Chang, K. Ghosh, V. Karbhari and C. Sikorsky, "Monitoring the Disbond of Externally Bonded CFRP Composite Strips for Rehabilitation of Bridges," Proceedings of EWSHM '06, Granada, Spain, July 5-7, 2006, 7 pp.
- 239 K. Ghosh, H. Guan and V.M. Karbhari, "Assessment and NDE of FRP Rehabilitation of Bridge Deck Slabs at Systems Level," Proceedings of the 3rd International Conference on Bridge Maintenance, Safety, Management, Life-Cycle Performance and Cost, Porto, Portugal, July 16-19, 2006, 8pp (Also pages 995-996 in the book of abstracts)
- 240 H. Guan, V.M. Karbhari and C.S. Sikorsky, "Operational Modal Analysis for Long-Term Bridge Performance Monitoring." Proceedings of the 3rd International Conference on Bridge Maintenance, Safety, Management, Life-Cycle Performance and Cost, Porto, Portugal, July 16-19, 2006, 8pp (Also page 999 in the book of abstracts)
- 241 A.A. Mufti, B. Bakht, N. Banthia, B. Benmokrane, G. Desgagné, R. Eden, M.A. Erki, J. Kroman, D. Lai, K. Neale, G. Tadros, A. Machida, B. Täljsten, and V. Karbhari, "New CHBDC Provisions for Design of Fibre Reinforced Structures," Proceedings of the 7th International Conference on Short & Medium Span Bridges, Montreal, Canada, August 23-25, 2006.
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- 243 R. Navada and V.M. Karbhari, "Environmental Sensitivity and Defect Criticality in FRP Bond to Concrete Through a Fracture Mechanics Approach," Proceedings of the 3rd International Conference on FRP Composites in Civil Engineering, Miami, FL, December 13-15, 2006, pp. 43-46.
- 244 R.A. Atadero and V.M. Karbhari, "Load and Resistance Factor Design for FRP Strengthening of Concrete Structures," Proceedings of the 3rd International Conference on FRP Composites in Civil Engineering, Miami, FL, December 13-15, 2006, pp. 255-258.

- 245 V.M. Karbhari, "From Replacement Components to the Development of Large-Scale Artificial Living Environments – Use of FRP for Intelligent Sustainable Infrastructure Systems" Proceedings of the International Conference on Recent Advances in Composite Materials, New Delhi, February 20-23, 2007, pp. 614-623.
- 246 V.M. Karbhari, C. Stachowski and L. Wu, "Combined Bending Stress and Hygrothermal Effects on Durability of E-Glass/Vinylester Composites," Proceedings of CDCC 2007, Quebec City, Canada, May 22-24, 2007, pp. 1-8.
- 247 S. Svetlik and V.M. Karbhari, "Hygrothermal Effects on Durability and Moisture Kinetics of Fiber-Reinforced Composites," Proceedings of CDCC 2007, Quebec City, Canada, May 22-24, 2007, pp. 177-184.
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- 250 S.L. Svetlik and V.M. Karbhari, "Extending Predictive Degradation Models to Hot, Humid Environments," Proceedings of SAMPE 2007, Baltimore, MD, June 3-7, 2007, 14 pp.
- 251 C.T. Love and V.M. Karbhari, "Interfacial Adhesion in Multi-Walled Carbon Nanotube/Reactive Ethylene Terpolymer Composites," Proceedings of SAMPE 2007, Baltimore, MD, June 3-7, 2007, 5 pp.
- 252 A. Pridmore and V.M. Karbhari, "Reliability and Durability of Prefabricated FRP Deck Formwork Systems," Proceedings of SAMPE 2007, Baltimore, MD, June 3-7, 2007, 10 pp.
- 253 C.T. Love, G. Xian and V.M. Karbhari, "Wet Adhesion and Cathodic Disbondment in Thermoplastic Blend Coatings," Proceedings of SAMPE 2007, Baltimore, MD, June 3-7, 2007, 14 pp.
- 254 C.T. Love, A. Gapin and V.M. Karbhari, "Multi-Walled Carbon Nanotube/Reactive Thermoplastic Composites," Proceedings of Nanopolymer 2007, Berlin, Germany, June 12-13, 2007, Paper 15, 7 pp.
- 255 R.P. Maloney and V.M. Karbhari, "Degradation of Cellulose/Hemp Biocomposites Under Various Processing and Hydrothermal Environments," Proceedings of the 16th International Conference on Composite Materials, Kyoto, Japan, July 8-13, 2007, MoGM1-03, 5 pp. (Also Pg. 122 in the book of Abstracts)
- 256 K.K. Ghosh and V.M. Karbhari, "Progressive Failure and Rehabilitation of RC Deck Systems With Composites," Proceedings of the 16th International Conference on Composite Materials, Kyoto, Japan, July 8-13, 2007, WeGM1-03, 10 pp. (Also Pgs. 698-699 in the book of Abstracts)
- 257 S.L. Svetlik and V.M. Karbhari, "A Mechanical Analysis of E-Glass/Vinylester in Hot, Humid Environments," Proceedings of the 16th International Conference on Composite Materials, Kyoto, Japan, July 8-13, 2007, MoGM1-03, 7 pp. (Also Pgs. 700-701 in the book of Abstracts)
- 258 G. Hegemier, F. Seible, V. Karbhari, C. Lee, T. Rodriguez-Nikl, M. Oesterle, T. Hutchinson, K. Morrill and J. Crawford, "The Use of Fiber Reinforced Polymers to Mitigate Natural and Man-Made Hazards," Proceedings of the 8th International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures, Patras, Greece, July 16-18, 2007, Paper K-2, 25 pp. (Also pp. 12-36 in the book of abstracts.)
- 259 J. Delaney and V.M. Karbhari, "Defect Criticality in FRP Strengthening," Proceedings of the 8th International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures, Patras, Greece, July 16-18, 2007, Paper 3-20, 10 pp. (Also pp. 166-167 in the book of abstracts).

- 260 R.A. Walker and V.M. Karbhari, "Durability Based Design for FRP Rehabilitation of Concrete," Proceedings of the 8th International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures, Patras, Greece, July 16-18, 2007, Paper 13-7, 10 pp. (Also pp. 532-533 in the book of abstracts).
- 261 A. Shirazi and V.M. Karbhari, "Quantifying Defects and Progression of Damage in FRP Rehabilitation of Concrete Through IR Thermography," Proceedings of the Asia-Pacific Conference on FRP in Structures, Hong Kong, December 12-14, 2007, pp. 605-610.
- 262 P. Wilcox, Q. Yang and V.M. Karbhari, "Durability of FRP Strengthened Systems," Proceedings of the Asia-Pacific Conference on FRP in Structures, Hong Kong, December 12-14, 2007, pp. 619-624
- 263 V.M. Karbhari, "FRP Structural Stay-in-Place Formwork as a Means of Rapid, Durable and Cost-Effective Construction and Rehabilitation," Proceedings of the International Conference & Exhibition of Reinforced Plastics (ICERP) 2008, Mumbai, India, February 7-9, 2008, Paper CP-b1-4, 8 pp.
- 264 V.M. Karbhari, A. Pridmore, L. Cheng and C. Sikorsky, "FRP Structural Stay-in-Place Formwork as a Means of Rapid, Durable and Cost-Effective Construction of Bridge Decks," Proceedings of the 2008 Accelerated Bridge Construction – Highway for Life Conference, Baltimore, MD, March 19-21, 2008, pp. 431-436.
- 265 C. Sikorsky, H. Guan and V.M. Karbhari, "Innovative Modular FRP Bridge Systems – Results of Monitoring After Over Five Years of Use," Proceedings of the 2008 Accelerated Bridge Construction – Highway for Life Conference, Baltimore, MD, March 19-21, 2008, pp. 437-442.
- 266 G. Brungraber and V.M. Karbhari, "Long-Term Integrity of Epoxy-Bonded Rebar Couplers," Proceedings of SAMPE '08, Long Beach, CA, May 18-22, 2008, 20 pp.
- 267 Q. Yang, V.M. Karbhari and C. Sikorsky, "Durability Study of Three Prefabricated Carbon/Epoxy Composites and their Respective Epoxy Adhesives Used for Bonding Them to Concrete," Proceedings of SAMPE '08, Long Beach, CA, May 18-22, 2008, 16 pp.
- 268 A. Pridmore and V.M. Karbhari, "Evaluation of Prefabricated FRP Structural Formwork Bridge Deck Systems," Proceedings of SAMPE '08, Long Beach, CA, May 18-22, 2008, 20 pp.

### ***TECHNICAL PRESENTATIONS (Including Invited, Keynote and Plenary Lectures)***

- Running Problem Sessions in the Sciences, University of Delaware, Center for Teaching Effectiveness, Annual Conference, Newark, DE, August 31, 1988.
- Running Problem Sessions in the Sciences and Engineering, University of Delaware, Center for Teaching Effectiveness, Annual Conference, Newark, DE, August 29, 1989.
- Scale Effects on Fracture and Damage Mechanisms in Composites, 1989, Center for Composite Materials, University-Industry Research Symposium, Newark, DE, September 21, 1989.
- Scale Effects in Fracture of Composites, University of Delaware, Department of Civil Engineering, Newark, DE, October 2, 1989.
- Running Review Sessions in Math and Engineering, (with M. Greenberg), University of Delaware, Annual Conference for Graduate Teaching Assistants, Newark, DE, August 27, 1990.
- Scale Effects in Composites, (with D.J. Wilkins), Center for Composite Materials, 1990 University-Industry Research Symposium, Newark, DE, September 13, 1990.
- The Scale Concept in Integrated Design for Composites, (with J.M. Henshaw and D.J. Wilkins), Center for Composite Materials, 1990 University-Industry Research Symposium, Newark, DE, September 13, 1990.
- Concurrent Engineering for Composites Manufacturing and Design, (with D.J. Wilkins), presented at the 10th Annual CCM Composites Workshop, Newark, DE, April 22-24, 1991.
- Introduction to Liquid Molding, presented at the 10th Annual CCM Composites Workshop, Newark, DE, April 22-24, 1991.
- Concurrent Engineering for Composites: Overcoming the Barriers, US Army/NSF Joint Symposium for the technology transfer of Concurrent Engineering Tools and Methodologies, Huntsville, AL, June 4-5, 1991, **INVITED PRESENTATION**.
- Decision Support Systems for the Concurrent Engineering of Composites, ASM/ESD Conference, Detroit, September 30-October 3, 1991.
- Effect of Preform Architecture and Injection Strategies on the Robustness of RTM Parts, ASM/ESD Conference, Detroit, September 20-October 3, 1991.
- Support Systems for Composites Product Development, 23rd International SAMPE Technical Conference, Lake Kiamesha, NY, October 1991.
- Effect of Fiber Architecture on Performance and Manufacturability of RTM Parts, 23rd International SAMPE Technical Conference, Lake Kiamesha, NY, October 1991.
- Strategies for Designing Multi-Element Preforms for RTM, 23rd International SAMPE Technical Conference, Lake Kiamesha, NY, October 1991.
- Influence of Microstructure on the Damage Mechanics of Composite Materials, Special Seminar on Mechanical Behavior of Materials, Massachusetts Institute of Technology, Boston, MA, December 2, 1991.
- The Total Quality Design (TQD) Approach to Concurrent Engineering, U.S. Army Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, MD, February 19, 1992.
- Selecting Materials Processes and Shapes: Getting it Right the First Time, 37th International SAMPE Symposium, Anaheim, CA, March 9-12, 1992.
- The Role of Expert and Decision Support Systems in Composites Design and Manufacturing, CADCOMP '92, Newark, DE, May 13-15, 1992.
- Microcrack-Interaction Induced Toughening in Ceramics and Advanced Composites, CADCOMP '92, Newark, DE, May 13-15, 1992.
- Concurrent Engineering and Design for Composites, (with D.J. Wilkins), 1992 CCM Composites Workshop, Newark, DE, May 20, 1992.
- Introduction to Liquid Molding – Resin Transfer Molding, 1992 CCM Composites Workshop, Newark, DE, May 29, 1992.

- Microcrack-Interaction Toughening in Ceramics and CMCs, 6th ASCE Engineering Mechanics Conference, College Station, TX, May 1992.
- Determination of Interfacial Shear and Normal Stresses in Fiber Pull-out, 6th ASCE Engineering Mechanics Conference, College Station, TX, May 1992.
- V.M. Karbhari, D.A. Steenkamer and D.J. Wilkins, The Use of Expert and Decision Support Systems for the Facilitation of Rapid Decision Making in Composites Design and Manufacture, 6th International SAMPE Electronic Materials and Processes Conference, Baltimore, MD, June 23-25, 1992.
- The Use of Advanced Composites in Civil Engineering – Dreams or Reality?, Department of Applied Mechanics and Engineering Sciences, University of California, San Diego, (UCSD), January 22, 1993, **INVITED SEMINAR.**
- Total Quality Design – An Approach to Design Integration, US Army Chemical Research, Development and Engineering Center, Aberdeen Proving Grounds, MD, February 3, 1993.
- Civil Engineering (with J.S. McDermott), JTEC Workshop on Advanced Manufacturing Technology for Polymer Composite Structures in Japan, Arlington, VA, February 18, 1993.
- Manufacturing Science, JTEC Workshop on Advanced Manufacturing Technology for Polymer Composite Structures in Japan, Arlington, VA, February 18, 1993.
- Product and Process Development Methods, JTEC Workshop on Advanced Manufacturing Technology for Polymer Composite Structures in Japan, Arlington, VA, February 18, 1993.
- Findings of the JTEC Panel on Advanced Manufacturing Technology for Polymer Composite Structures in Japan, Polymers and Coatings Committee, 1993 SAE International Congress and Exposition, Detroit, MI, March 1, 1993, **INVITED TALK.**
- Effect of Preform Architecture on Flow and Processing in Resin Transfer Molding, 1993 SAE International Congress and Exposition, Detroit, MI, March 1, 1993.
- Impact Resistant Glass Fiber Architectures for Increased Energy Absorption and Structure Survivability through RTM, 1993 SAE International Congress and Exposition, Detroit, MI, March 1, 1993.
- Use of Waste Injection Molding Pellets as Aggregate in Concrete: A Preliminary Study of Viability, 1993 SAE International Congress and Exposition, Detroit, MI, March 1, 1993.
- Development of Composite Materials and Technology for Use in Bridge Structures, NSF Symposium on Practical Solutions for Bridge Strengthening and Rehabilitation, Des Moines, IA, April 5-6, 1993.
- A View of the Japanese Advanced Composites Industry Approach to Market Development, Operations Research Seminar, University of Delaware, Newark, DE, April 22, 1993.
- Composites: Materials and Applications in Civil Engineering, Oak Ridge National Laboratories, Oak Ridge, TN, May 4, 1993, **INVITED LECTURE.**
- Resin Transfer Molding, (with D.J. Steenkamer), 1993 CCM Composites Workshop, Newark, DE, May 18-20, 1993.
- Impact: Design, Materials, Damage, and NDL, (with K.V. Steiner and R.W. Rydin) 1993 CCM Composites Workshop, Newark, DE, May 18-20, 1993.
- Decision Support Systems, (with R. Pitchumani and D. Claar), 1993 CCM Composites Workshop, Newark, DE, May 18-20, 1993.
- Concurrent Engineering and Design, 1993 CCM Composites Workshop, Newark, DE, May 18-20, 1993.
- Composites in Construction, 1993 CCM Composites Workshop, Newark, DE, May 18-20, 1993.
- Composites: Materials and Applications in Civil Engineering Infrastructure, SAMPE Wilmington-Philadelphia Chapter, PA, May 20, 1993.
- Resin Transfer Molding and 3D Reinforced Composites, CRCAS Workshop, Melbourne, September 16-17, 1993, **PRINCIPLE LECTURER.**



- The Use of Composites for Civil Infrastructure, joint meeting of the Australian Composite Structures Society (ACSS) and the Society for the Advancement of Materials and Process Engineering (SAMPE), Melbourne, September 16, 1993, **INVITED TALK.**
- Resin Transfer Molding and 3D Reinforced Composites, CRCAS Workshop, Sydney, September 23-24, 1993, **PRINCIPLE LECTURER.**
- Effect of Sizings on Microscopic Flow Encountered in RTM Processing, 25th International SAMPE Technical Conference, Philadelphia, PA, October 1993.
- Civil Engineering Applications for Advanced Composites, Defense Conversion Workshop, El Segundo, CA, November 3-4, 1993, **INVITED TALK.**
- Influence of Preform Architecture on Progressive Crush and Post-Impact Behavior of a Stiffened Plate RTM Structure, 9th Annual ASM/ESD Advanced Composites Conference, Dearborn, MI, November 1993.
- Composites Issues and Activities in Infrastructure, Gordon Research Conference, Ventura, CA, January 10-14, 1994.
- Civil Engineering Applications for Advanced Composites, Composites, Composites Technology Center – CTC Cerritos College and GLCC, Cerritos, CA, January 21, 1994, **KEYNOTE SPEAKER.**
- Applications of Composites Materials to Civil Construction and Infrastructure Rehabilitation, Center for Advanced Technology for Large Structural Systems (ATLSS), Lehigh University, April 13, 1994, **INVITED SEMINAR.**
- A Global Overview of Composites for Infrastructure, 1994 CCM Composites Workshop, Newark, DE, May 10-12, 1994.
- Resin Transfer Molding, (with G. Palmese), 1994 CCM Composites Workshop, Newark, DE, May 10-12, 1994.
- Advanced Issues in Resin Transfer Molding, (with G. Palmese), 1994 CCM Composites Workshop, Newark, DE, May 10-12, 1994.
- Applications for Composites in Civil Infrastructure, (with S.G. Borleske, DuPont), The Second Annual Wilson Forum, San Diego, CA, April 18-19, 1994.
- Issues of Design and Durability for the Use of Composites in Civil Infrastructure, 1994 SEM Spring Conference, Baltimore, MD, June 6, 1994, **PLENARY LECTURE.**
- Strategies for the Use of Composite Wraps on Concrete Columns, Exploratory Workshop on Repair of Concrete Piers by ACM, Ministry of Transportation, Ontario, Toronto, Canada, September 17, 1994, **INVITED LECTURE.**
- Methods for Using Composites in Infrastructure Rehabilitation, Composite Materials for Civil Engineering Applications, 1994 BFRL Building Technology Symposia Series, National Institute of Standards and Technology, October 12, 1994, **INVITED LECTURE.**
- Flexural and Toughening Behavior of Cementitious Composites Reinforced by Waste Prepreg and Recycling Issues Thereof, 10th ASM/ESD Advanced Composites Conference and Exposition, Detroit, MI, November 1994.
- Effect of Sizings on Microscopic Flow Encountered in RTM Processing of S2-Glass Fibers, 10th ASM/ESD Advanced Composites Conference and Exposition, Detroit, MI, November 1994.
- Nonwovens as Reinforcement in Commercial and Infrastructure Composite Applications, IDEA '95 The International Nonwovens Conference and Exposition, Philadelphia, PA, April 27, 1995, **INVITED PRESENTATION.**
- Effect of Fabric Architecture on the Impact Response of RTM Composites: Use of Novel Metrics, 40th International SAMPE Symposium and Exhibition, Anaheim, CA, May 8-11, 1995.
- On the Use of a Modified Peel Test for Determination of Concrete-Composite Bond Durability, 40th International SAMPE Symposium and Exhibition, Anaheim, CA, May 8-11, 1995.

- Composites for Infrastructure Renewal – Issues and Concepts, A New World for Composites, Cerritos College, Norwalk, CA, September 13, 1995, **INVITED TALK.**
- Use of Fibers, Polymers and Composites in Infrastructure Renewal – Concepts, Materials and Manufacturing Issues, ASCE Technical Activities Committee on Emerging Materials in Civil Engineering, Milwaukee, WI, September 26, 1995.
- Characteristics of Adhesion Between Composites and Concrete as Related to Infrastructure Rehabilitation, 27th SAMPE International Technical Conference, Albuquerque, NM, October 12, 1995.
- Effect of Fiber Sizing on Processing and Performance of S2 Glass Composites, 27th SAMPE International Technical Conference, Albuquerque, NM, October 12, 1995.
- On the Use of Composites in Civil Infrastructure: Renewal and Rehabilitation, Mechanical and Aerospace Engineering Colloquium, San Diego State University, San Diego, Ca, November 30, 1995.
- Issues in Joining of Composites to Concrete – Rehabilitation and Retrofit, Composites ‘96, ASM Manufacturing and Tooling Conference, Anaheim, CA, January 24, 1996, **INVITED TALK.**
- Status and Concepts in Composite Bridge Deck Development, 4th Annual Wilson Forum, San Francisco, March 11, 1996.
- Processing of Composites Using Resin Transfer Molding and Resin Infusion Type Processes, 1996 Spring Seminar, ASM International, San Diego, March 21, 1996, **INVITED TALK.**
- Effect of Braid Architecture on the Progressive Crush of Composite Tubes, 41st International SAMPE Symposium, Anaheim, Ca, March 28, 1996.
- Civil Infrastructure and Composite Materials: Issues in Materials and Manufacturing, 41st International SAMPE Symposium, Anaheim, Ca, March 28, 1996.
- Fabrication and Testing of Fiber-Reinforced Composite Bridge Decks, 4th National Workshop on Bridge Research in Progress, Buffalo, NY, June 19, 1996.
- Effects of Sizings and Interphases on Processing and Performance of Composites: Issues for Large Structural Composites, Special Meeting of the Australian Composite Structures Society, Melbourne, Australia, June 24, 1996, **INVITED TALK.**
- Fiber Reinforced Composites in Civil Engineering and Infrastructure Applications, Cooperative Research Center for Aerospace Structures, Melbourne, Australia, June 25, 1996, **INVITED TALK.**
- Fiber Reinforced Composites and Civil Infrastructure – Towards the 21st Century, Institution of Engineers, Sydney, Australia, June 26, 1996, **INVITED LECTURE.**
- Fiber Reinforced Composites for Renewal of Civil Infrastructure in the 21st Century, 3rd International Conference on Composites Engineering, New Orleans, LA, July 26, 1996, **DISTINGUISHED LECTURE.**
- On the Use of Composites in Bridging, Research and Development Establishment, Dighi, India, August 30, 1996, **INVITED TALK.**
- On the Role of the Interphase in Polymer Matrix Composites, Polymer Composites Group, RD&E and Pune University, Pune, India, September 3, 1996, **INVITED TALK.**
- Large Scale Fiber Reinforced Structures for the 21st Century, Shimizu Institute of Technology, Tokyo, Japan, October 22, 1996, **INVITED SEMINAR.**
- On the Use of Fiber Reinforced Composites for Infrastructure Renewal – A Systems Approach, 1996 ASCE Annual Convention and 4th Materials Conference, Washington DC, November 12, 1996.
- Fiber Reinforced Composite Decks for Infrastructure Renewal – Results and Issues, International Composites Exposition, Nashville, TN, January 28, 1997.
- Durability Considerations of Composites for Seismic Retrofit, UDOT Workshop on Composites Retrofit Technology, Salt Lake City, UT, February 5, 1997.
- On the Use of Composites for Bridge Strengthening and Rehabilitation – Manufacturing and Durability, 2nd Symposium on Practical Solutions for Bridge Strengthening and Rehabilitation, Kansas City, KS, March 25, 1997.

- Progressive Crush of Hybrid Composite Components, Advanced Composites Conference/The United New Generation Vehicle Conference, Detroit, MI, April 8, 1997.
- Use of Composite Materials in Infrastructure, New England Composite Materials Conference, Portland, Maine, April 10, 1997. **INVITED TALK.**
- On the Use of Composites for Bridge Renewal: Materials, Manufacturing and Durability, 42nd International SAMPE Symposium, Anaheim, CA, May 4, 1997.
- The Use of Composites in the Japanese Construction Industry, World Technology Evaluation Center, National Science Foundation, Arlington, VA, May 22, 1997, **SPECIAL SEMINAR.**
- Use of Composites for 21st Century Bridge Infrastructure, 8th SICOMP Conference on Manufacturing and Design of Composites, Pitea, Sweden, June 2, 1997, **KEYNOTE LECTURE.**
- Application of Composite Materials to the Renewal of 21st Century Civil Infrastructure, 11th International Conference on Composite Materials, ICCM-11, Gold Coast, Australia, July 15, 1997, **PLENARY TALK.**
- Seismic Applications, FHWA Region 7 Seminar, July 23, 1997.
- Durability and Systems Level Design Guidelines for the Use of Fiber Reinforced Composite Reinforcement in Civil Infrastructure, 3rd International Symposium on Non-Metallic (FRP) Reinforcement for Concrete Structures, Sapporo, Japan, October 1997.
- Composite Materials and Processing Methods, Workshop on Advanced Technologies for Bridge Infrastructure Renewal, Rome, Italy, November 21, 1997, **INVITED TALK.**
- Fiber Reinforced Composites for Civil Engineering and Infrastructure Applications, 15th Australasian Conference on the Mechanics of Structures and Materials, Melbourne, Australia, December 8, 1997, **KEYNOTE PAPER.**
- Standards, Durability and Test Methods for Materials, Manufacturing, and Quality Control in Repair, NIST Workshop on Standards Development for FRP Repair, Tuscon, AZ, January 7, 1998.
- Fiber Reinforced Composites for Civil Infrastructure – Applications, Materials and Manufacturing, San Diego Chapter of ASM International, January 15, 1998.
- Use of Composites in Civil Infrastructure, Japan Reinforced Plastics Study Tour, San Diego, CA, January 26, 1998.
- Cross Cutting Technical Challenges in Civil Infrastructure, NIST Workshop on Composites for Infrastructure and Offshore Applications, Gaithersburg, MD, January 29, 1998.
- Composite Materials Technology, Composites for Naval Structures Workshop, La Jolla, Ca, March 3, 1998.
- Composites for 21st Century Civil Infrastructure – Materials, Manufacture and Design, IMM Workshop on Materials for the Infrastructure, La Jolla, CA, April 3, 1998.
- Use of Composites for the Rehabilitation of Bridge Infrastructure, International Concrete Repair Institute, 3rd Annual Symposium on Repair and Strengthening of Concrete, Pleasanton, CA, May 7, 1998, **INVITED TALK.**
- Status of Composites for 21st Century Civil Infrastructure – Manufacturing and Design Issues, 12th ASCE Engineering Mechanics Conference, La Jolla, CA, May 19, 1998.
- Design Considerations for FRP Rehabilitation of Concrete Structures, Damstruc '98, Rio-de-Janeiro, Brazil, May 1998.
- Structural Characterization of Fiber Reinforced Composite Short- and Medium-Span Bridge Systems, European Conference on Composite Materials, Naples, Italy, June 3, 1998.
- Japan's Model for R&D and Deployment of Composites in Bridge Infrastructure, US DOT seminar on Creative Financing and Deployment of Innovative Transportation Technologies in the NAFTA Region, San Diego, July 27, 1998.
- Environmental Durability of Glass Fiber Reinforced Composites – Short Term Effects, First International Conference on Durability of Fibre Reinforced Composites for Construction, Sherbrooke, Canada, August 6, 1998.

- Damage Tolerance and Durability of an Advanced Composite Bridge System, First International Conference on Durability of Fibre Reinforced Composites for Construction, Sherbrooke, Canada, August 6, 1998.
- Repair of PCCP with Fiber Reinforced Composites, ASCE Conference: Pipelines in the Constructed Environment, San Diego, August 26, 1998.
- Rehabilitation of Concrete Structures Using Fiber Reinforced Composites, 2nd RILEM International Conference on Rehabilitation of Structures, Melbourne, Australia, September 23, 1998.
- An Overview of Fiber Composites Useage in Civil and Structural Engineering, Advance Composites in Civil and Structural Engineering Conference, ACCSE '98, Brisbane, Australia, September 25, 1998, **KEYNOTE TALK.**
- Materials and Design Considerations in FRP Rehabilitation of Concrete Structures, 3rd International Conference on Fracture Mechanics of Concrete and Concrete Structures, Gifu, Japan, October 15, 1998, **INVITED TALK.**
- FRP Composites Bridges, Composite Fabricators Association – 1998 Polymer Concrete Seminar, San Antonio, TX, October 20, 1998, **INVITED TALK.**
- Durability of Adhesives for FRP/Concrete Bonding: Microanalysis of the Adhesive Bond Surface, ACI Fall Convention, Los Angeles, CA, October 26, 1998.
- Composites in Cold Regions: Results, Implications, and the Future, US Army Cold Regions Research and Engineering Laboratory, Hanover, NH, November 22, 1998, **INVITED SEMINAR.**
- Enhancing Computing/Control Facilities, Research, and Education Related to Seismic Effects on Structures, Technology for Education 2000, UCSD, San Diego, CA, January 12, 1999.
- The HITEC Evaluation Program for Composite Column Wrap Systems for Seismic Retrofit, International Composites Exposition '99, Cincinnati, OH, May 10, 1999.
- Materials Design Considerations for the Use of FRP Composites for Renewal of Civil Infrastructure, International Composites Exposition '99, Cincinnati, OH, May 11, 1999.
- FRP Composites for Twenty-First Century Civil Infrastructure – Concepts for Structures Designed with Composites, International Composites Exposition '99, Cincinnati, OH, May 11, 1999.
- Effect of Concrete Based Alkaline Solutions on the Short Term Response of Composites, 44th International SAMP Symposium, Long Beach, CA, May 27, 1999.
- Composites: Materials, Design, Processing and Durability – Implications for Use in Civil Infrastructure Renewal, Royal Institute of Technology, Stockholm, Sweden, May 29, 1999, **INVITED SEMINAR.**
- The Renewal of Civil Infrastructure: The Future of Composites, Swedish Institute of Composites, Pitea, Sweden, June 1, 1999, **KEYNOTE LECTURE.**
- Seismic Retrofitting and Strengthening of Columns with Composite Materials, Infrastructure Regeneration and Rehabilitation, University of Sheffield, Sheffield, UK, June 29, 1999.
- Materials and Process Considerations in the Development of Composite Material Forms for Infrastructure Rehabilitation, Advanced Composites Group, Darby, UK, June 30, 1999, **INVITED SEMINAR.**
- Durability of Fiber Reinforced Composites in Civil Infrastructure: Issues, Results and Implications, DURACOSYS '99, Brussels, Belgium, July 13, 1999.
- Composites in Infrastructure, IVW Kaiserslautern, Kaiserslautern, Germany, July 15, 1999, **INVITED SEMINAR.**
- Developments in Design Standards for Advanced Composites in Infrastructure Applications, Cooperative Research Center for Advanced Composite Structures, Melbourne, Australia, August 17, 1999, **INVITED TALK.**
- Composites Manufacturing for 21st Century Infrastructure, Australia Composites Structures Society, Melbourne, Australia, August 18, 1999, **INVITED TALK.**

- Developments in Composites Fueled by 21st Century Infrastructure, Hawker deHavilland, Bankstown, Australia, August 19, 1999, **INVITED TALK.**
- New Developments in Materials for Transportation and Infrastructure Applications, RTA, Sydney, Australia, August 20, 1999, **INVITED TALK.**
- Composites in Civil Infrastructure: Implications of Materials, Manufacturing, and Durability, SAMPE Los Angeles Chapter, Los Angeles, CA, October 19, 1999, **INVITED TALK.**
- Durability of Composites in Civil Infrastructure – Status Overview, CFA, Chicago, October 26, 1999.
- Post-Strengthening of Concrete Slabs, ACI Fall Convention, Baltimore, MD, November 2, 1999.
- FRP Composites for Infrastructure Renewal – Status and Challenges for the 21st Century, ACUN-2, Sydney, Australia, February 15, 2000.
- Durability and Long-Term Performance of Composite Repair and Rehabilitation Systems, Conference on Seismic Repair and Rehabilitation of Structures 2, Fullerton, CA, March 22, 2000
- Composite Materials in Infrastructure, SAMPE San Diego Chapter and California Society of Professional Engineers, San Diego, CA, April 27, 2000
- Critical Gaps in Durability Data for FRP Composites in Civil Infrastructure, 45th International SAMPE Symposium, Long Beach, Ca, May 22, 2000.
- Design Considerations for FRP Rehabilitation and Upgrading of Concrete Structures, 2nd International Conference on the Behavior of Damaged Structures, Niteroi, Brazil, June 3, 2000, **SPECIAL LECTURE.**
- Composites in the Renewal of Civil Infrastructure – Materials, Manufacturing, Design and Durability, 9th US-Japan Conference on Composite Materials, Mishima, Japan, July 4, 2000, **PLENARY TALK.**
- The HITEC Process As a Facilitator of New Technology for Bridge Components, CERF International Symposium and Innovative Technology Tradeshow, Washington, DC, August 16, 2000
- Characterization of Hybrid FRP Beam-Slab Bridge Systems, 3rd International Conference on Advanced Composite Materials in Bridges and Structures, Ottawa, Canada, August 17, 2000.
- Overview of Composites in Civil Engineering, 1st Fibre Composites Design and Development Conference, Brisbane, Australia, September 14, 2000, **PLENARY TALK.**
- Retrofit of Existing Civil Structures, 1st Fibre Composites Design and Development Conference, Brisbane, Australia, September 14, 2000
- Testing Protocols for Composite Bridge Structures, 1st Fibre Composites Design and Development Conference, Brisbane, Australia, September 14, 2000
- FRP Composites As Materials of Construction, ENCORD Advanced Polymer Composite Materials for Structural Use, Stockholm, Sweden, October 16, 2000, **KEYNOTE SPEECH.**
- Effect of Moisture/Solution on Composites for Civil Infrastructure, 2000 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, November 9, 2000.
- Effect of Alkaline Environments on Composites for Civil Infrastructure, 2000 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, November 9, 2000.
- MDA/CERF Durability Program – The Path Forward, 2000 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, November 9, 2000.
- Use of FRP Composite Materials in the Renewal of Civil Infrastructure in Seismic Regions, 2nd Workshop on Mitigation of Earthquake Disaster By Advanced Technologies, MEDAT-2, Las Vegas, NV, November 30, 2000
- Development of Carbon Fiber Reinforced Composites as Construction Materials for Bridge Structures, The Global Outlook for Carbon Fiber 2000, San Antonio, TX, December 5, 2000, **INVITED LECTURE.**
- Aqueous Environment Related Moisture Kinetics and Durability of E-glass/Vinylester Composites, ACUN-3 Conference, Sydney, Australia, February 9, 2002. **GUEST OF HONOR LECTURE.**

- Rational Use of FRP Composites in Civil Infrastructure Renewal, Caltrans, Engineering Services Center, Sacramento, CA, January 17, 2001
- Strengthening and Repair of Concrete Structures Using Composites, Faculty of Civil Engineering and Technology, Universidade Nova de Lisboa, Lisbon, Portugal, March 1, 2001
- Impact on Composite Plates at Moderately High Speeds, Faculty of Civil Engineering and Technology, Universidade Nova de Lisboa, Lisbon, Portugal, March 1, 2001
- Development and Characterization of Modular FRP Bridge Systems, ISIS Canada, University of Manitoba, Winnipeg, Canada, May 24, 2001
- A Rational Approach to the Durability, Characterization and Lifetime Prediction of Composites, 6th Caltrans Seismic Research Workshop, Sacramento, Ca, June 12, 2001.
- Characterization of Sub-Zero Response of Vinylester FRP in Civil Infrastructure Renewal, 11th International Offshore and Polar Engineering Conference, Stavanger, Norway, June 20, 2001.
- Latest Advances in Advanced Composites for Building Marine Oil Terminals, California State Lands Commission, Martinez, CA, June 27, 2001, **INVITED TALK.**
- Design and Evaluation of Modular Bridge Systems Using FRP Composite Materials, 5th conference on Fibre Reinforced Plastics for Reinforced Concrete Structures, Cambridge, UK, July 17, 2001.
- Materials Characterization and Design Allowables for the Use of Polymers and FRP Composites, 2nd International Advanced Engineered Wood Composites, Bethel, Maine, August 16, 2001.
- Durability of FRP in Corrosion and Construction Applications, 12th CFA Technical Conference on Construction and Corrosion, Las Vegas, NV, September 11, 2001
- Durability, Damage Tolerance, and Monitoring of FRP Composites Used for Seismic Retrofit and Strengthening of Bridges, International Conference on Composites in Construction, Porto, Portugal, October 11, 2001, **KEYNOTE LECTURE.**
- Correlation of Laboratory and Field Studies of Ageing Degradation of Composite Systems in Civil Infrastructure, 5th International Conference on Durability Analysis of Composite Systems, DURACOSYS 2001, Tokyo, Japan, November 9, 2001, **KEYNOTE LECTURE.**
- Durability of FRP Composites in Civil Infrastructure – Myth or Reality, International Conference on FRP Composites in Civil Engineering, CICE 2001, Hong Kong, December 12, 2001, **INVITED THEME PAPER.**
- 3rd Energy Absorbing Characteristics of Circular Frustra, International Crashworthiness Conference, Melbourne, Australia, February 25, 2002
- Materials and Durability Characterization of Composite Seismic Wrap Systems using NOL Ring Tests, 14th Symposium on Composite Materials: Testing and Design, ASTM, Pittsburgh, PA, March 11, 2002.
- Durability of FRP Composites for Civil Infrastructure – Myth, Mystery, or Reality, Conference on Advanced Polymer Composites for Structural Applications, Southampton, UK, April 16, 2002, **KEYNOTE LECTURE.**
- Beyond Rehabilitation – Use of FRP Composites in New Structural Systems: Laboratory and Field Implementation, Conference on Advanced Polymer Composites for Structural Applications, Southampton, UK, April 16, 2002, **KEYNOTE LECTURE.**
- Design Allowables and Materials Resistance Factors, 2nd International Conference on Durability of Fibre Reinforced Polymer (FRP) Composites for Construction, Montreal, Canada, May 29, 2002, **KEYNOTE LECTURE.**
- Characterization and Modeling of Moisture and Alkali Effects on E-Glass/Vinylester Composites, 2nd International Conference on Durability of Fibre Reinforced Polymer (FRP) Composites for Construction, Montreal, Canada, May 30, 2002
- Development of FRP Composite Deck Systems and Implementation on the Kings Stormwater Channel Bridge, International IASS Symposium on Lightweight Structures in Civil Engineering, Warsaw, Poland, June 24, 2002.

- FRP Composites in Civil Infrastructure – Challenges as Related to Durability and Aging, Ninth International Conference on Composites Engineering, ICCE/9, San Diego, July 1, 2002, **DISTINGUISHED LECTURE.**
- Design and Validation Testing of the I-5/Gilman Advanced Technology Bridge, 1st International Conference on Bridge Maintenance, Safety and Management, Barcelona, Spain, July 15, 2002
- Mysteries of Durability of FRP Composites in Civil Infrastructure, ACUN-4, Sydney, Australia, July 23, 2002, **KEYNOTE LECTURE.**
- Threat Mitigation Using Composites, Homeland Security Workshop, University of California, San Diego, August 22, 2002.
- Composites and Critical Infrastructure – Synergy in the 21st Century, Australian Composites Structures Society, Melbourne, Australia, September 11, 2002, **INVITED TALK.**
- Field Validation and Monitoring of Bridge Renewal Using FRP Composites, IABSE Symposium, Melbourne, Australia, September 12, 2002
- A Review of Durability Based Safety Factors for the use of FRP Composites in Civil Infrastructure, 10th US-Japan Conference on Composite Materials, Stanford, Ca, September 16, 2002, **SESSION KEYNOTE PAPER.**
- Carbon Fiber Composites in Civil Infrastructure – From the Laboratory to Field Applications, Carbon Fiber 2002, Raleigh, NC, October 22, 2002, **INVITED TALK.**
- Overview and Worldwide Perspective of FRP Bridge Decks, 2003 CFA Technical Conference, Las Vegas, NV, April 23, 2003.
- Results of Laboratory and Field Tests From the HITEC Program on Column Wrap, 2003 CFA Technical Conference, Las Vegas, NV, April 23, 2003.
- Automation of Damage Index Method to Evaluate Structural Safety, Thirteenth International Offshore and Polar Engineering Conference, Honolulu, HI, May 26, 2003.
- Hygrothermal Effects on Transition Behavior of Carbon-FRP Composites, Thirteenth International Offshore and Polar Engineering Conference, Honolulu, HI, May 26, 2003.
- Synergistic Hydrothermal Effects on Durability of E-Glass/Vinylester Composites, 6th International Symposium on Fibre-Reinforced Polymer Reinforcement for Concrete Structures, Singapore, July 8, 2003.
- Composite Structural Systems – From Characterization to Field Implementation, 6th International Symposium on Fibre-Reinforced Polymer Reinforcement for Concrete Structures, Singapore, July 9, 2003.
- Comprehensive Evaluation and Monitoring of Strengthening Using FRP Composites, International Symposium of the Japan Concrete Institute on Latest Achievement of Technology and Research on Retrofitting Concrete Structures, Kyoto, Japan, July 2003, **KEYNOTE LECTURE.**
- Synergistic Effects on the Durability of Pultruded E-Glass Composites, 5th Canadian International Composites Conference, Ottawa, Canada, August 20, 2003.
- Characterization and Durability of T700/Epoxy Composites for Civil Infrastructure Rehabilitation, 5th Canadian International Composites Conference, Ottawa, Canada, August 21, 2003.
- Fiber Reinforced Composites in Bridge Systems – From Development to Implementation, Graduate Research Seminar Series, Department of Civil Engineering, and Fiber Science Program, Cornell University, Ithaca, NY, September 11, 2003.
- FRP Reinforced Steel Free Modular Deck System, ACI Fall Convention, Boston, Sept. 28, 2003.
- Web-Based Structural Health Monitoring of a FRP Composite Bridge, 1st International Conference on Structural Health Monitoring and Intelligent Infrastructure, Tokyo, Japan, November 14, 2003 **INVITED SPECIAL PRESENTATION**
- Fiber Reinforced Composite Bridge Systems – Transition from the Laboratory to the Field, 12th International Conference on Composite Structures, ICCS 12, Melbourne, Australia, November 18, 2003. **INVITED KEYNOTE**

- NCHRP-514 Results – Bonded Repair and Retrofit of Concrete Structures Using FRP Composites, Canadian Highway Bridge Design Code FRP Committee, Ottawa, June 13 2004.
- Construction Specifications for Bonded Repair and Retrofit of Concrete Structures Using FRP Composites, National Academies NCHRP Project 10-59A Workshop, Woods Hole, MA, June 30-July 1 2004 (with A. Mirmiran and M. Shahawy)
- Characterization and Design Optimization of FRP Composite Modular System for Slab-on-Girder Bridges,” 4th Asian-Australasian Conference on Composite Materials, Sydney, Australia, July 8, 2004.
- Development of FRP Composite Modular System for Slab-on-Girder Bridges,” 4th International Conference on Advanced Composite Materials in Bridges and Structures, ACMBS IV, Calgary, Canada July 23, 2004.
- Mechanisms of Durability Related to Low Temperature Hygrothermal Degradation of FRP Composites, NSF Workshop on Performance and Design of Fiber Reinforced Polymer Composites at Very Cold Temperatures, University of Alaska, Fairbanks, August 13, 2004, **INVITED PRESENTATION**.
- Fibre Reinforced Polymer Composites: Building Materials for the Renewal of Civil Infrastructure,” Reinforced Plastics Asia, Bangkok, Thailand, September 2, 2004, **INVITED PRESENTATION**.
- Advanced Materials and Technologies for Bridge Infrastructure Renewal, Autonomous University of Baja California (UABC) Mexicali, Baja California, Mexico, September 20, 2004, **Key Note Speaker** at the Inauguration of the Academy of Information for Highways (as part of collaboration between FHWA, Caltrans and the Mexican Highway Department)
- Construction Specifications for Bonded Repair and Retrofit of Concrete Structures Using FRP Composites – Results of a NCHRP Study, Composites 2004 Convention and Trade Show, American Composite Manufacturers Association, Tampa, FL, October 7, 2004.
- Health Monitoring, Damage Prognosis and Service-Life Prediction – Issues Related to Implementation, North American Euro-Pacific Workshop on Sensing Issues in Civil Structural Health Monitoring, Honolulu, HI, November 2, 2004.
- Specifications: Inspection and Repair, TRB Workshop 143 on Construction Specifications for Bonded Repair of Concrete Structures Using Fiber Composites, 84th Annual Meeting of the Transportation Research Board, Washington, DC, January 9, 2005.
- Field Applications: Examples of Repair, TRB Workshop 143 on Construction Specifications for Bonded Repair of Concrete Structures Using Fiber Composites, 84th Annual Meeting of the Transportation Research Board, Washington, DC, January 9, 2005.
- Durability and Defect Assessment of FRP Materials Used in Rehabilitation of Concrete and Application to Reliability Analysis, TRB Committee AFF80, 84th Annual Meeting of the Transportation Research Board, Washington, DC, January 10, 2005.
- Rapid Post-Hazard Assessment (with S. Saiidi), FHWA Virtual Team Meeting, San Diego, CA, March 7, 2005.
- The Myths, Mystery and Reality of Durability of FRP Composites in Civil Infrastructure, Composites 2005, American Composites Manufacturers Association, Columbus, Ohio, Sept. 29, 2005.
- Long-Term Durability, Service-Life Estimation and Reliability of Composites for Rehabilitation of Civil Infrastructure, Carbon Fiber 2005, San Diego, October 13, 2005 (**INVITED PRESENTATION**).
- Reliability and Durability of FRP Materials for Rehabilitation of Concrete, Caltrans Bridge Research Conference 2005, Sacramento, Oct. 31, 2005.
- Durability Assessment Using Combined Environmental Exposure and Bending Strains, FRPRCS-7, Kansas City, Nov. 9, 2005



- FRP Composites – A 21st Century Solution to the Renewal of Civil Infrastructure, ACMA , Sacramento 2006: Building the State, Building in Industry, April 3, 2006 (**INVITED PRESENTATION**).
- Durable, Reliable and Effective FRP Structures – How Do We Know and What Information Do We Need? ACMA , Sacramento 2006: Building the State, Building in Industry, April 3, 2006 (**INVITED PRESENTATION**).
- Durability of FRP Composites – From Materials to Structures, Structures Seminar, Department of Civil & Environmental Engineering, University of California, Irvine, May 18, 2006.
- Structural Health Monitoring – A Multi-Purpose Tool for Infrastructure and Intelligent Transportation Systems Development, Workshop on Intelligent Transportation Systems: Exploring Opportunities in Collaborative Research, US-India Summit on Education, Research and Technology, La Jolla, Ca, May 30, 2006.
- Durability Based Design of FRP Jackets for Seismic Retrofit, ACMA, Composites & Polycon 2006, St. Louis, MO, October 18, 2006.
- Environmental Sensitivity and Defect Criticality in FRP Bond to concrete Through a Fracture Mechanics Approach, CICE 2006, Miami, FL, December 13, 2006.
- Materials and Systems Durability Aspects of CFRP Strengthening of Steel, TRB Workshop 178 on Design and Behavior of Steel Bridges Strengthened With Fiber-Reinforced Polymer Matrices, 86th Annual Meeting of the Transportation Research Board, Washington, DC, January 21, 2007.
- From Replacement Components to the Development of Large-Scale Artificial Living Environments – Use of FRP for Intelligent Sustainable Infrastructure Systems, International Conference on Recent Advances in Composite Materials, New Delhi, India, February 22, 2007 (**INVITED PRESENTATION**).
- Durability of FRP Composites for Civil Infrastructure, Composites Committee, California Department of Transportation, Sacramento, April 17, 2007 (**INVITED PRESENTATION**).
- Rapid Renewal of Bridge Decks Using FRP Stay-In-Place Structural Formwork With Steel-Free Concrete, ACMA 2007 Conference on Construction, Corrosion and Infrastructure: Tomorrow's Structures Today, Las Vegas, NV, April 25, 2007 (**INVITED PRESENTATION**).
- FRP Composites – A 21st Century Solution to the Renewal of Civil Infrastructure, ACMA Board Meeting, San Diego, April 30, 2007 (**INVITED PRESENTATION**).
- Sustainability and Technology – Opposite Ends of the Spectrum?, Policy Issues in Sustainable Development, IRPS, UCSD, May 16, 2007 (**INVITED PRESENTATION**).
- Polymers, Composites and Prestress Losses – Results and Implications, California Department of Transportation, Earthquake Engineering Committee, Sacramento, CA, May 31, 2007 (**INVITED PRESENTATION**).
- Progressive Failure and Rehabilitation of RC Deck Systems With Composites, 16th International Conference on Composite Materials, Kyoto, Japan, July 11, 2007 (**KEYNOTE LECTURE**).
- Defect Criticality in FRP Strengthening, 8th International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures – Patras, Greece, July 16, 2007.
- Durability Based Design for FRP Rehabilitation of Concrete, Defect Criticality in FRP Strengthening, 8th International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures – Patras, Greece, July 17, 2007.
- FRP Structural Stay-in-Place Formwork as a Means of Rapid, Durable and Cost-Effective Construction and Rehabilitation, International Conference & Exhibition of Reinforced Plastics (ICERP), Mumbai, India, February 8, 2008.
- Composites and Infrastructure Renewal – Past, Present and the Future Towards a Sustainable Built Environment, Composites Australia/Composites CRC 2008 Annual Conference, Melbourne, Australia, March 13, 2008 (**KEYNOTE LECTURE**).

- FRP Structural Stay-in-Place Formwork as a Means of Rapid, Durable and Cost-Effective Construction of Bridge Decks,” Proceedings of the 2008 Accelerated Bridge Construction – Highway for Life Conference, Baltimore, MD, March 21, 2008.
- Durability Characterization and Prediction for Resin/Adhesive Based FRP Rehabilitation – Third Symposium on Durability of Building and Construction Sealants and Adhesives, Denver, June 25, 2008.
- The Changing Roles of Universities and Knowledge in a Technologically Advanced Society, 5th International Conference on Technology, Knowledge and Society, Huntsville, AL, Feb 1, 2009 **(PLENARY TALK)**.
- The Changing Roles of Universities, Instruction and Knowledge, Scholars Institute: Transforming Higher Education at Net Speed, Huntsville, AL, May 19, 2010 **(KEYNOTE)**
- Temporal Thermal Response of Carbon Fiber Reinforced Polymer Composites – An Assessment of Durability and Integrity, ICCE-18, Anchorage, Alaska, July 7, 2010 **(KEYNOTE)**

**FUNDED RESEARCH Contracts, Grants, AND GIFTS**

*(The list only includes awards on which I am the PI/Co-PI and does not include (a) projects in which I was just a participant, (b) donations of equipment and/or resources, (c) funding provided to the University in my administrative capacity)*

**University of Alabama in Huntsville**

\$246,419	Assessment of Durability and Reliability of Seismic Response Modification Devices, California Department of Transportation, August 2010– December 2011
\$160,426	Assessment of Long-Term Durability of FRP Composite Materials, subcontract from UCSD, July 2009-December 2010
\$39,804	Evaluation of Long-Term Performance of Epoxy Bonded Couplers, California Department of Transportation, January 2009-December 2009
\$96,250	Emergency Repair of Damaged Bridge Columns Using Fiber Reinforced Polymer (FRP) Materials, California Department of Transportation, August 2008 – June 2009.

**University of California, San Diego**

\$669,055	Assessment and Reliability of Seismic Response Modification Devices In-Service, California Department of Transportation, May 2008 – December 2010 ( <i>Co-PI: G. Benzoni</i> )
\$1,970,947	Dumbarton Bridge Test Program, California Department of Transportation, May 2008 – June 2009
\$819,342	Blast Mitigation of FRP Ship Structures, Office of Naval Research, February 2008-September 2009 ( <i>Co-PIs: R. Asaro, H. Kim and G. Hegemier</i> )
\$60,000	Investigation of the use of Near Surface Mounted FRP Bars for Rehabilitation, California Department of Transportation, January 2008-June 2008.
\$147,876	Viscous Damper Forensic Study, California Department of Transportation, October 2007-June 2008.
\$12,000	Gift for R&D and educational activities in the area of thermal effects and durability, Fyfe Corporation, LLC.
\$50,000	Gift for R&D and educational activities in the area of Dental Materials. Ribbond Inc.
\$300,000	Assessment of Long-Term Field Durability of FRP Composites for Infrastructure, California Department of Transportation, August 2006-December 2009.
\$58,000	Composites from Renewable Resources – New Approaches to High Performance and Sustainable Development through the Investigation and Formulation of Multifunctional Materials, San Diego Foundation and Blasker Foundation.
\$9,976	Development of a Temperature Control System for Better Education on Materials and Structures, UCSD Instructional Improvement Program, May 2007 – June 2008 (co-PI's: Y. Qiao and C-M. Uang)
\$150,000	Scripps Foundation for Science and the Environment (UCSD PI for collaborative venture – total multi-year funding)
\$150,000	Anti-Corrosion Coatings, DuPont, 2006-2008.
\$164,550	Emergency Repair of Damaged Bridge Columns Using FRP Materials, California Department of Transportation, June 2006 – May 2009.
\$25,000	Gift for R&D and educational activities in the area of Dental Materials. Ribbond Inc.
\$217,603	Evaluation of Long-Term Performance of Epoxy-Bonded Couplers, California Department of Transportation, January 2006 – December 2008.
\$31,473	FRPP Walls for Blast, Naval Air Warfare Center AD (LKE), October 2005 – April, 2006.
\$56,000	Low Energy Polymer Curing, L3 Photonics and Space and Naval Warfare Systems Center (SPAWARSYCEN), October 2005 – December 2006.

\$150,000 Investigation of Low-Cost Manufacturing Techniques for Rapid Fabrication of Hybrid Primary Structural Composites, Merkel Composite Technologies, Inc., August 2005 – August 2006  
 \$183,435 Development of Multi-Cell Modular FRP Composite Systems for Blast Mitigation, Office of Naval Research, May 2005 – May 2006  
 \$99,942 Response Assessment of Bridge Systems – Seismic, Live and Long-Term Loads, California Department of Transportation, July 2005 – June 2006  
 \$3,000 Gift for R&D in the Field of Composites for Infrastructure, Fyfe Co. LLC, April 2005  
 \$250,000 Structural Response to Blast Loading, Phase 1, California Department of Transportation, March 2005 – June 2007 (Phase 1 of a Two- Phase \$750,000 program)  
 \$215,811 Continuous Monitoring of the Performance of Isolated Bridges, California Department of Transportation, July 2004 – June 2006 (*Co-PI: G. Benzoni*)  
 \$700,000: Investigation of Time-Dependent Losses in Materials, California Department of Transportation and FHWA Pooled Fund Program, January 2004-June 2010.  
 \$253,007: Investigation of Novel Composite System for Confinement and Internal Pressure, Merkel Composite Technologies, September 2003 – December 2004.  
 \$640,000: Los Alamos – UC San Diego Educational Collaboration, DOE/Los Alamos National Laboratory, August 2003 – August 2004 (*Co-PI: F. Seible*).  
 \$50,000 Unrestricted funds, Jacobs School of Engineering, UCSD  
 \$200,000: Blast Protection of Structural Components and Systems Through Containment and Energy Absorption, Naval Air Warfare Center through Office of Naval Research, May 2003-December 2004.  
 \$215,000: Anti-Corrosion Coating Technology, Dupont  
 \$615,609: Integration of Strength Reduction Factors for FRP Composite Materials in the LRFD Bridge Specifications, California Department of Transportation, March 2003 – June 2008.  
 \$3,360: Tension Tests for Characterization of Specialized Alloy Bars, MFMX Technologies Corporation, December 2002 – February 2003.  
 \$5,000: Award, Durability of Composites in Infrastructure, Western Chapter of the Composites Fabricators Association (CFA), August 2002.  
 \$300,000: Design of Smart Composite Material Systems, National Science Foundation, July 2002 – June 2005 (with Stanford University, co-PI at Stanford F-K. Chang, UCSD share \$145,898)  
 \$6,142: Web Based Instruction Augmentation for Freshmen Structural Engineering Majors, UCSD Academic Planning and Resources, July 2002 – June 2003.  
 \$71,441: Instrumentation for Wireless Monitoring of the Kings Stormwater Channel Bridge, California Department of Transportation, May 2002 – December 2002  
 \$4,977,663: Response assessment of bridge systems – seismic, live, and long-term loads, California Department of Transportation, March 2002 – June 2005.  
 \$569,973: Assessment and prediction of long-term durability of FRP composites for bridge structures, California Department of Transportation, February 2002 – December 2007  
 \$289,395: Determination of durability of FRP composite systems for concrete structure repair and strengthening, Civil Engineering Research Foundation, February 2002 – April 2004.  
 \$430,036: Determination of durability of materials in FRP composite bridge decks, Civil Engineering Research Foundation, August 2001 – December 2004.  
 \$175,000: Assessment of durability of E-glass/Vinylester composite materials, California Department of Transportation, June 2001 – September 2002.  
 \$550,000: Evaluating rapid rehabilitation of bridges using advanced composite materials, California Department of Transportation, March 2001 – June 2004.  
 \$100,000: Verification test and structural monitoring of Kings Stormwater Channel composite bridge, Texas A&M University, January 2001 – August 2002.

\$150,000: Characterization and durability evaluation of T700 based fabric for civil infrastructure rehabilitation, Toray, January 2001 – December 2002.

\$180,000: Methods for detecting defects in composite reinforced structures, Oregon Department of Transportation, September 2000 – September 2004.

\$4,230: NOL ring testing, Aerospace Corporation, September 2000 – December 2000.

\$575,000: Full instrumentation and on-line monitoring of the I5-Gilman advanced technology bridge, California Department of Transportation, March 2000 – June 2004 (*co-PI: F. Seible*).

\$3,605: Testing of fabric based rings, Hexcel Corporation, January 2000 – February 2000.

\$297,570: Supplementary studies in support of the I5/Gilman advanced technology bridge, California Department of Transportation, December 1999 – June 2000 (*co-PI: F. Seible*).

\$31,000: Research in dental materials, Ribbond Corporation, September 1999-open.

\$8,579: Comparison of NOL burst tests on filament wound and fabric wrapped NOL rings, Aerospace Corporation, September 1999 – October 1999.

\$368,249: Composites rehabilitation of reinforced concrete bridge decks – Byron Road Bridge, California Department of Water Resources, August 1, 1999 – August 31, 2003.

\$5,032: Web based instructional tools for relativistic learning in freshmen engineering design, UCSD VCAA, June 15, 1999 – June 14, 2000 (*co-PI: F. Seible*)

\$32,102: Durability evaluation of rings – sizing change characterization, Hexcel Corporation, April 1, 1999 – March 31, 2000.

\$241,751: Full-scale characterization, testing and durability of large diameter PCCP, California Department of Water Resources, April 1, 1999 – August 31, 2003.

\$25,000: Research, Charles Lee Powell Foundation, July 1998 – June 1999

\$365,000: Durability evaluation of composite wrap systems for seismic retrofit, Civil Engineering Research Foundation, July 1998 – Jul 2002.

\$150,000: Characterization and Connection of Modular Carbon-Glass Hybrid Composite Tube System, National Science Foundation, May 1998 – April 2002 (*co-PI: F. Seible*)

\$79,788: Strengthening of Cut-Out Slabs, Sika Corporation, May 1998 – December 1998.

\$10,686: Burst characterization of 20” NOL Rings, Aerospace Corporation, May 1998 – December 1998.

\$252,919: Continuous fiber reinforced cementitious matrix column retrofit techniques, Xxsys Technologies, Inc., September 1997 – February 1999.

\$34,995: Characterization of bolted joint behavior of NPC glass composites, Fiberite Inc., July 1997 – August 1998.

\$25,000: Research award, Charles Lee Powell Foundation, July 1997 – June 1998.

\$6,750: NOL ring assessment , Fiberite, Inc., July 1997 – August 1997.

\$257,500: Processing of large composite structures fabricated using the resin infusion family of processes, National Science Foundation, CAREER Award, July 1997 – June 2002

\$249,941: Fiber reinforced composite retrofit of large diameter prestressed concrete cylinder water pipe (PCCP) for water transmission, California Department of Water Resources, July 1997 – March 1999 (*co-PI: F. Seible*)

\$200,249: Enhancing computing/control facilities: Research and education related to seismic effects on structures, Intel Corporation, June 1997 – December 1998

\$1,093,808: Advanced Composites for bridge infrastructure renewal, Defense Advanced Research Projects Agency, November 1996 – March 2000 (*Co-PIs: G.A. Hegemier and F. Seible*).

\$20,000: Development of Polymer modified concrete matrix based fiber retrofit technique, Fluor Daniel Corporation, September 1996 (*co-PI: F. Seible*)

\$15,161: Crush Phase II, Clark-Cutler-McDermott Corporation, September 1996 – July 1998.

\$45,000: Environmental test chamber, Fluor Foundation, December 1995.

\$49,912: Microfiller based nanocomposites, Micromineral Resources, Inc., October 1995 – July 1996.

- \$12,500: Development of felt performs as energy absorbing layers in crash energy management, Clark-Cutler-McDermott Corporation, August 1995 – July 1996.
- \$11,000,000: Advanced Composites for Bridge Infrastructure Renewal, Advanced Research Projects Agency, June 1994 – November 1996 (*co-PIs: G.A. Hegemier and F. Seible*)

**University of Delaware**

- \$30,000: Investigation into the use of Schillerite systems in concrete, Quinto Mining Corporation, April 1994 – September 1994 (*co-PIs: R.F. Eduljee and G.R. Palmese*)
- \$30,000: Investigation into the use of Schillerite systems in thermoplasticse, Quinto Mining Corporation, April 1994 – September 1994 (*co-PIs: R.F. Eduljee and G.R. Palmese*)
- \$10,000: Studies on resin transfer molding of CMCs, Dow Corning Corporation, April 1994.
- \$34,970: Advanced composite cable-stayed bridge systems development, University of California San Diego, March 1994 – January 1995.
- \$10,000: Use of Needle felt products in infrastructure, Clark-Cutler-McDermott Corporation, March 1994 – February 1995.
- \$75,000: Investigation of E-beam cure on composite performance, Damilic Corporation, March 1994 – March 1995.
- \$48,349: Multidisciplinary design and analysis fellowship, National Aeronautical and Space Agency, 1994 (*co-PIs: R.H. Allen, M. Keeffe and D.J. Wilkins*).
- \$100,000: Rehabilitation of Steel Infrastructure, Transportation Research Board under the NCHRP program, 1993 – 1995 (*co-PIs: J.W. Gillespie and D.R. Mertz*).
- \$40,000: Investigation of new material forms and NDE techniques for RTM (CMCs), Delaware Research Partnership Program, December 1993 – December 1994.
- \$40,000: Investigation of new material forms and NDE techniques for RTM (CMCs), Dow Corning Corporation, December 1993 – December 1994.
- \$50,000: Use of Composites in Infrastructure Rehabilitation/Renewal, Delaware Research Partnership Program, December 1993 – December 1994.
- \$50,000: Use of Composites in Infrastructure Rehabilitation/Renewal, Tonen Corporation, December 1993 – December 1994.
- \$60,000: Investigation of crush using RTM/Pultruded sections, Daimler Benz, July 1993 – December 1994 (*co-PI: K.V. Steiner*).
- \$30,000: Use of Composites in RTM and hybrid RTM/Pultruded crush structures, Delaware Research Partnership Program, July 1993 – December 1994 (*co-PI: K.V. Steiner*).
- \$30,582: Use of Composites in RTM and hybrid RTM/Pultruded crush structures, Daimler Benz, July 1993 – December 1994 (*co-PI: K.V. Steiner*).
- \$50,000: Benchmarking of the State-of-the-Art in composites processing technology for applicability in the composite armored vehicle – advanced technology demonstrator (CAV-ATD) Program, TACOM, April 1993 – May 1994.
- \$20,000: Composite armored vehicle program, General Dynamics Land Systems Division, March 1993 – December 1993.
- \$100,000: Studies on resin transfer molding (CMCs), Dow Corning Corporation, December 1992 – December 1993.
- \$10,000: Design and development of cardiac catheters using carbon fibers, Schneider (USA), November 1992 – April 1993 (*co-PI: R.F. Eduljee*).
- \$12,000: Improving OC fenestration and construction/structural products, Owens Corning, November 1992 – June 1993. (*co-PI: J.W. Gillespie*).
- \$22,687: Uses of fiber reinforced plastics in structures and for rehabilitation of concrete box girders, Delaware Department of Transportation, July 1992 – June 1993 (*co-PIs: M.C. Chajes, V.N. Kaliakin and D.R. Mertz*).
- \$22,353: Analysis of Flat slab bridges, Delaware Department of Transportation, July 1992 – June 1993 (*co-PIs: M.C. Chajes, V.N. Kaliakin and D.R. Mertz*).

- \$473,584: Rapid performing technology for ceramic matrix composites, Defense Advanced Research Projects Agency, May 1992 – January 1994 (*co-PIs: A.N. Beris, T.W. Chou and D.J. Wilkins*).
- \$473,584: Rapid placement technology for polymer matrix composites, Defense Advanced Research Projects Agency, May 1992 – January 1994 (*co-PIs: S.G. Advani, J.W. Gillespie, K.V. Steiner and D.J. Wilkins*).
- \$3,430,000: ARO/URI Multidisciplinary program in manufacturing science of polymeric composites, Army Research Office, April 1992 – March 1997 (*co-PIs: S. G. Advani, A.N. Beris, T.W. Chou, P.S. Dhurjati, J.W. Gillespie, J.B. Mehl, R.B. Pipes, M.H. Santare, A.D. Shine, K.V. Steiner and D.J. Wilkins*).
- \$5,000: RTM of honeycomb panels, Lockheed Aeronautical and Space Systems, February 1992 – April 1992.
- \$60,000: Studies for RTM of CMCs, Dow Corning Corporation, December 1991 – December 1992.
- \$178,859: Damage containment and monitoring for increased survivability using textile structural composites, US Army TACOM, October 1991 – September 1993.
- \$99,999: Feasibility study and fabrication of potential composite components of a production intent lightweight electric generator, Ft. Belvoir RD&E Laboratories, September 1991 – October 1992 (*co-PIs: J.W. Gillespie and K.V. Steiner*).
- \$20,000: Application of TQD for materials selection and review of draft standards, US Army MICOM, November 1990 – July 1991.

(September 2014)