

Curriculum Vitae

Eslam Soliman, PhD., EIT

Associate Professor

Civil Engineering Department,

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<https://scholar.google.com/citations?user=thUWxdoAAAAJ&hl=en>

HIGHLIGHTS

- + 50 published articles in peer reviewed journals and conference proceedings with +800 citations.
- h-index: 14 (Google)
- Associate Editor in ASCE Journal of materials in civil engineering.
- Peer reviewer for multiple journals in civil engineering discipline.
- Three issued US patents and several other pending/provisional patent applications.
- Co-supervised +10 graduate students towards their academic degrees.
- Taught +10 undergraduate and graduate courses in USA and Egypt
- Contributing author to technical reports for MDOT and ASCE.
- Participation in the structural design and testing for various construction projects in USA, Canada, UAE, Saudi Arabia, and Egypt.

EDUCATION

- **Ph.D., Civil Engineering [Structural Mechanics]** with distinction (GPA 4.08)
University of New Mexico (UNM), Albuquerque, NM-87131, USA (2008-2011)
- **M.S., Civil Engineering [Structural]** (GPA 3.99)
Lawrence Technological University, Southfield, MI-48075, USA (2005-2008)
- **B.S., Civil Engineering** with distinction (GPA 3.88 Evaluated by WES, Inc.)
Assiut University, Assiut, 71516, EGYPT (1998-2003)

EMPLOYMENTS

- **Associate Professor** at Department of Civil Engineering, Assiut University, Assiut, Egypt (July 2018 - present).
- **Research Assistant Professor** at Department of Civil Engineering, University of New Mexico, NM, USA (January 2018 – July 2019).
- **Post-Doctoral Fellow for 12 months** at Department of Civil Engineering, University of New Mexico, NM, USA, Supervisor: Dr. Mahmoud Reda Taha (January 2012 - June 2012 & August 2014 - February 2015).
- **Assistant Professor** at Department of Civil Engineering, Assiut University, Assiut, Egypt (2013 - 2018).
- **Research and Teaching Assistant** at the Nanomaterials and SHM Laboratory, Department of Civil Engineering, University of New Mexico, Albuquerque, USA, Supervisor: Dr. Mahmoud Reda Taha (2008-2011)

- **Research Assistant** at Structural Testing Center (STC) and Center of Innovative Materials Research (CIMR), Civil Engineering Department, Lawrence Technological University, Southfield, Michigan, Supervisor: Dr. Nabil Grade (2005-2008)
- **Teaching Assistant** at Civil Engineering Department, Faculty of Engineering, Assiut University, Assiut, Egypt. (January 2005-June 2005)
- **Trainee** at Institution of Hydraulic Engineering and Water Resources Management (IWW), Aachen University of Technology (RWTH-Aachen), Aachen, Germany. (July 2002-August 2002)

TEACHING EXPERIENCE

I Taught several undergraduate and graduate courses at *University of New Mexico* and *Assiut University* including.

- Teaching Assistant: Resilience (CE 598-006) on-line course, Departments of Civil Engineering, *University of New Mexico*, Albuquerque, USA (Fall 2018 – Fall 2021).
- Teaching Assistant: Introduction to Decision Making under Uncertainty (CE 598-007) on-line course, Departments of Civil Engineering, *University of New Mexico*, Albuquerque, USA (Fall 2018 – Fall 2021).
- Co-Instructed: Selected Topics - Structural Composites/Mechanics of Materials (CE 598-004) course, Departments of Civil and Mechanical Engineering, *University of New Mexico*, Albuquerque, USA (Fall 2018).
- Co-Instructed: Materials for Construction Managers (MCM) on-line course, Department of Civil Engineering, *University of New Mexico*, Albuquerque, USA (Summer 2017 - Summer 2022).
- Instructor: Mechanics of Materials (CE 302-004), Department of Civil Engineering, *University of New Mexico*, Albuquerque, USA (Fall 2014). [IDEA evaluation: overall ratings for Teacher (4.6/5.0) and Course (4.0/5.0)]
- Instructor: Civil Engineering Materials (CE 305) Course Laboratory, Department of Civil Engineering, *University of New Mexico*, Albuquerque, USA (Fall 2008, Fall 2009 & Fall 2010)
- Instructor: Theory of Structures (1-B) (C121), First year Civil, Department of Civil Engineering, *Assiut University*, Assiut, Egypt. (Spring 2013, 2014 & 2016)
- Instructor: Computer Applications in Civil Engineering (1-B) (C425), Fourth year Civil, Department of Civil Engineering, *Assiut University*, Assiut, Egypt. (Fall 2013, Fall 2015 & Fall 2016)
- Teaching Assistant: Steel Construction (C301), Third year Architecture, Department of Architecture Engineering, *Assiut University*, Assiut, Egypt. (Fall 2013)
- Instructor: Mechanics of Composite Materials, M.Sc. in Structural Engineering, Department of Civil Engineering, *Assiut University*, Assiut, Egypt. (Spring 2013)
- Instructor: Advanced Theory of Structures (M01603), M.Sc. in Structural Engineering, Department of Civil Engineering, *Assiut University*, Assiut, Egypt. (Spring 2013, Spring 2014)
- Teaching Assistant: Design of Concrete Structures (C222), Second year Civil, Department of Civil Engineering, Assiut University, Assiut, Egypt. (Spring 2005)
- Teaching Assistant: Design of Steel Bridges (C427), Fourth year Civil, Department of Civil Engineering, *Assiut University*, Assiut, Egypt. (Spring 2005)

PATENTS

- Mahmoud Reda Taha, Usama Farid Kandil, and **Eslam Soliman** "Generation of Polymer Concretes Incorporating Carbon Nanotubes." U.S. Patent No. 8,426,501. 23, April 2013.
- Mahmoud Reda Taha and **Eslam Soliman** "Ductile Fiber Reinforced Polymers Plates and Bars Using Mono-Type Fibers." U.S. Patent No. 10,377,186 B2, July 2019.
- **Eslam Soliman** and Mahmoud Reda Taha "Gradually Recruited Fiber Reinforced Polymer (FRP) Composite with Superior Ductility." U.S. Patent No. 11,400,685 B2, August 2022.
- Mahmoud Reda Taha, Arafat Khan, and **Eslam Soliman** "Stiffener Free Lightweight Composite Panels " Provisional Patent, US patent application No. US 2022/0274358 A1.

LIST OF PUBLICATIONS

Refereed Journal Articles

- [1] Najvani, M. A. D., Murcia, D. H., **Soliman, E.**, and Taha, M. M. R. "Early-age strength and failure characteristics of 3D printable polymer concrete." *Construction and Building Materials*, 2023, 394, 132119.
- [2] Jaradat, M., **Soliman, E.**, and Taha, M. R. "3D-Printed Bio-Inspired Mechanically Interlocked Viscoelastic Dampers for Energy Dissipation." *Materials & Design*, 2023, 228, 111826.
- [3] Vemuganti, S., **Soliman, E.**, and Taha, M. R. "Exploiting Fiber Control for Delayed Failure in 3D Printed Fiber Reinforced Polymer Composites." *Composites Part B: Engineering*, 2023, 251, 110495.
- [4] **Soliman, E. M.**, Lee, D., Stormont, J. C., and Taha, M. M. R. "New Mathematical Formulations for Accurate Estimate of Nitrogen Leakage Rate Using Distributed Temperature Sensing in Mechanical Integrity Tests." *Journal of Petroleum Science and Engineering*, 2022, 110710.
- [5] Murcia, D. H., Çomak, B., **Soliman, E.**, and Reda Taha, M. M. "Flexural Behavior of a Novel Textile-Reinforced Polymer Concrete." *Polymers*, 2022, 14(1), 176.
- [6] Starr, J., **Soliman, E. M.**, Matteo, E. N., Dewers, T., Stormont, J. C., and Taha, M. R. "Mechanical Characterization of Low Modulus Polymer-Modified Calcium-Silicate-Hydrate (C–S–H) Binder." *Cement and Concrete Composites*, 2021, 124, 104219.
- [7] Reda Taha, M., Ayyub, B. M., Soga, K., Daghash, S., Heras Murcia, D., Moreu, F., and **Soliman, E.** "Emerging Technologies for Resilient Infrastructure: Conspectus and Roadmap." *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 2021, 7(2), 03121002.
- [8] Vemuganti, S., **Soliman, E.**, and Reda Taha, M. "3D-Printed Pseudo Ductile Fiber-Reinforced Polymer (FRP) Composite Using Discrete Fiber Orientations." *Fibers*, 2020, 8(9), 53.
- [9] Fekry, A. A., Nassr, A. A., Ismail, A. M., **Soliman, E. M.**, and Gamal, A. "Behavior of Steel Hollow Sections Under Blast Load." *Journal of Advanced Engineering Trends*, 2020, 39(2), 121-134.
- [10] **Soliman, E.** and Nassr, A. "Bayesian Simulation and Sensitivity Analysis for Modeling of Single Fiber Pullout Test." *Composite Interfaces*, 2018, 26(1).
- [11] Abdel-Mohti, A., **Soliman, E.**, and Shen, H. "Thermal Stability of Latex Modified Mortars Containing CNTs." *International Journal of Concrete Structures and Materials*, 2018, 12(1), 40.
- [12] Borowski, E. C., **Soliman, E. M.**, Khan, A. I., and Taha, M. M. R. "Stowage and Deployment of a Viscoelastic Orthotropic Carbon-Fiber Composite Tape Spring." *Journal of Spacecraft and Rockets*, 2018, 1-12.

- [13] Abdel-Mohti, A., **Soliman, E.**, and Shen, H. "Effect of Adding Carbon Nanotubes on the Freeze-Thaw and Thermal Fatigue Resistance of Latex Modified Mortar." *Fibers*, 2018, 6(2), 19.
- [14] Genedy, M., **Soliman, E. M.**, Kandil, U., and Reda Taha, M. M. "Improving Shear Strength of GFRP Bolted Lap Joints Using CNT", *Journal of Reinforced Plastics and Composites*, 2017, 0731684417697827.
- [15] Khan, A., Borowski, E., **Soliman, E. M.**, and Reda Taha, M. M. "Modeling Viscoelastic Behavior of Laminated Composites for Deployable Aerospace Structures", *ASCE Journal of Aerospace Engineering*, 30 (5), 2017, 04017040.
- [16] **Soliman, E.**, Aboubakr, S. H., Reda Taha, M. M. "Estimating Fracture Toughness of C-S-H using Nanoindentation and The Extended Finite Element Method" *International Journal of Advances in Engineering Sciences and Applied Mathematics*, 2017, 1-15.
- [17] Daghash, S., **Soliman, E. M.**, Kandil, U. F. and Reda Taha, M. M. "Improving Impact Resistance of polymer Concrete Using CNTs", *Journal of Concrete Structures and Materials*, 2016, 10(4), 539-553.
- [18] Aboubakr, S. H., Begaye, M. L. **Soliman, E.**, Reda Taha, M. M. "Correlating Microstructural Features, elastic and Viscoelastic Characteristics of Synthetic C-S-H.", *ACI SP: Novel Characterization Techniques and Advanced Cementitious Materials: Tribute to James J. Beaudoin*, Pour-Ghaz, M., Alizadeh. A. R., Weiss, J., Eds., pp. 8.1-8.12, 2016
- [19] **Soliman, E. M.**, Kandil, U. F., and Reda Taha, M. M. "Interlaminar Fracture Toughness of CFRP Laminates Incorporating Multi-Walled Carbon Nanotubes", *Polymers*, 7, 2015, 1020-1045.
- [20] Genedy, M., Daghash, S., **Soliman, E.**, and Taha, M. M. R. "Improving Fatigue Performance of GFRP Composite Using Carbon Nanotubes." *Fibers*, 2015, 3(1), 13-29.
- [21] **Soliman, E. M.**, Kandil, U. F., and Reda Taha, M. M. "Investigation of FRP Lap Splice Using Epoxy Containing Carbon Nanotubes", *Journal of Composites for Construction*, 19 (2), 2014, 04014045.
- [22] **Soliman, E.**, Kandil, U., and Taha, M. R. "Improved Strength and Toughness of Carbon Woven Fabric Composites with Functionalized MWCNTs", *Materials*, 7(6), 2014, 4640-4657.
- [23] **Soliman, E. M.**, Shyka, M. P. and Reda Taha, M. M. "Low Velocity Impact of Thin Woven Carbon Fabric Composites Incorporating Carbon Nanotubes", *International Journal of Impact Engineering*, 47, 2012, 39-47.
- [24] **Soliman, E. M.**, Al-Haik, M. and Reda Taha, M.M. "On and Off-Axis Tension Behavior of Fiber Reinforced Polymer (FRP) Composites Incorporating Multi-walled Carbon Nanotubes", *Journal of Composite Materials*, 46 (14), 2012, 1661-1675.
- [25] **Soliman, E. M.**, Kandil, U. F. and Reda Taha, M. M. "The Significance of Carbon Nanotubes on Styrene Butadiene Rubber (SBR) and SBR Modified Mortar", *Materials and Structures*, 45 (6), 2012, 803-816.
- [26] **Soliman, E. M.**, Kandil, U. F. and Reda Taha, M. M. "Limiting Shear Creep of Epoxy Adhesive at the FRP-Concrete Interface Using Carbon Nanotubes at the FRP-Concrete Interface", *International Journal for Adhesion and Adhesives*, 33, 2012, 36-44.
- [27] Grace, N., Patki, K., **Soliman, E.** and Hanson, J. "Flexural Behavior of Side-By-Side Box-Beam Bridges - A Comparative Study" *PCI Journal*, 56 (3), 2011, 94-112.
- [28] **Soliman, E. M.**, Kandil, U. F. and Reda Taha, M.M. "A New Latex Modified Mortar Incorporating Carbon Nanotubes: Preliminary Investigations", *Advances on the Use of Polymers in Concrete*, ACI SP-278, 2011.
- [29] Grace, N., Jensen, E., Matsagar, V., **Soliman, E.**, Hanson, J. "Transverse Diaphragms and Unbonded CFRP Transverse Post-Tensioning in Side-by-Side Box Beam Bridges", *PCI Journal*, 55 (2), 2010, 109 - 122.

Conference Proceedings

- [30] Jaradat, M., **Soliman, E.**, and Taha, M. R. "Experimental Investigation of 3D-Printed Elastomeric Dampers." *In ASCE UCLA Lifelines Conference*, 2022.
- [31] Nassr, A. A., El-Latif, A. A., **Soliman, E.**, and Aly, A. G. "Numerical modeling of compression behavior of foam concrete using representative volume element." *In AIP Conference Proceedings*, AIP Publishing LLC, 2020, 2039(1), p. 020017.
- [32] Lee, D., **Soliman, E. M.**, and Taha, M. M. R. "Volumes-Based and Mass-Based Distributed Temperature Sensing (DTS) Technology for Accurate Prediction of Nitrogen Leakage in Mechanical Integrity Tests" *Solution Mining Research Institute Spring (SMRI) Technical Conference*, April 2020, Detroit, Michigan, USA.
- [33] Lee, D., **Soliman, E. M.**, and Taha, M. M. R. "Innovative Mechanical Integrity Tests for Solution-mined Caverns Using Distributed Temperature Sensing (DTS) Technology" *Solution Mining Research Institute Spring (SMRI) Technical Conference*, April 2019, New Orleans, Louisiana, USA.
- [34] Wang, L., **Soliman, E.**, and Taha, M. R. "Seismic response of pultruded GFRP frame using multicontinuum theory." *In Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications*, CRC Press, December 2019, pp. 1576-1581.
- [35] Comak, B., **Soliman, E.**, Chennareddy, R., and Taha, M. R. "Flexural Behavior of Polymer-Based Textile-Reinforced Concrete Using Basalt Fibers." *In Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications*, CRC Press, December 2019, pp. 1486-1490.
- [36] Abdel-Emam, M., **Soliman, E.**, Nassr, A., Khair-Eldeen, W., and Abd-Elshafy, A. Dynamic Behavior of Textile Reinforced Polymer Concrete Using Split Hopkinson Pressure Bar. *In International Congress on Polymers in Concrete (ICPIC-2018)*, Springer, April 2018, pp. 389-395.
- [37] Khan, A. I., **Soliman, E. M.**, Reda Taha M. M. "Finite Element Simulation of Stiffener Free Composite Panels with Carbon Nanotubes." 32nd Technical Conference of American Society of Composites (ASC), Indiana, USA, October 2017.
- [38] Nassr, A., **Soliman, E.**, Khair-Eldeen, W., Mahran, E., "Strength of Textile Reinforced Concrete (TRC) Plates Under Dynamic Punching Shear" *The 4th International Conference on Protective Structures (ICPS4)*, Beijing, China, 18-21 October 2016.
- [39] **Soliman, E.**, Genedy, M., and Reda Taha, M. "Short Lap Splices Made Possible Using Nanomaterials." *The 14th international conference on structural and Geotechnical Engineering (ICSGE)*, Cairo, Egypt, December 2015.
- [40] Aboubakr, S. H., **Soliman, E. M.**, and Reda Taha, M. M. "Fracture Toughness of Synthetic C-S-H Using Nanoindentation", *Proceedings of the 10th International Conference on Creep, Shrinkage, and Durability Mechanics, CONCREEP10*, pp. 517-526, 2015.
- [41] Borowski, E., Aboubakr, S. H., **Soliman, E.**, Reda Taha, M. M. "Fracture Toughness of Carbon Fiber Laminates Including Carbon Nanotubes", *Proceedings of American Society for Composites 29th Technical Conference*, 16th US-Japan Conference on Composite Materials, San Diego, USA, September 2014.
- [42] Genedy, M., Daghash, S., **Soliman, E.**, and Taha, M. M. R. "Improving Tensile Strength of GFRP Using Carbon Nanotubes." *The 7th International Conference on FRP Composites in Civil Engineering, International Institute for FRP in Construction*, Vancouver, Canada, August 2014.
- [43] Daghash, S. M., Griffin, A., **Soliman, E.**, and Reda Taha, M. M. "Fatigue of Glass Fiber Reinforced Polymer (GFRP) Incorporating Carbon Nanotubes", *Proceedings of the 9th International Conference of Composite Science and Technology*, Meo, M. Ed., Sorrento, Naples, Italy, pp. 309-319, April 2013.

- [44] **Soliman, E.**, Kandil, U. F., and Reda Taha, M. M. "Interlaminar Fracture Toughness of Woven Fabric Composites Reinforced with MWCNTs", *Proceedings of the 9th International Conference of Composite Science and Technology*, Meo, M. Ed., Sorrento, Naples, Italy, pp. 320-329, April 2013.
- [45] **Soliman, E.**, Kandil, U. F., and Reda Taha, M. M. "Flexure Response of Multi-Scale Thin Woven Carbon Fabric Epoxy Composites Reinforced By Multi-Walled Carbon Nanotubes" *16th International Conference on Petroleum, Mineral Resources & Development PMRD*, Cairo, Egypt, February 2013.
- [46] **Soliman, E.**, Kandil, U. F., Reda Taha, M.M., "Carbon Nanotubes for Shortening FRP Lap Splice", *Proceedings of 6th International Conference on Advanced Composite Materials in Bridges and Structures (ACMBS)*, Kingston, Ontario, Canada, May 2012.
- [47] **Soliman, E.**, Kandil, U.F., Reda Taha, M.M., "Creep of Fiber Reinforced Polymer-Epoxy-Concrete Interface Incorporating Carbon Nanotubes", *Proceedings of the First Middle East Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, SMAR 2011*, Dubai, UAE, February 2011.
- [48] Taha, M. R., **Soliman, E.**, Sheyka, M., Reinhardt, A., & Al-Haik, M. "Fracture Toughness of Hydrated Cement Using Nanoindentation", *CD Proceedings of 7th International Conference on Fracture Mechanics of Concrete and Concrete Structures (FramCoS-7)*, Jeju, South Korea, May 2010.
- [49] Dai, J., **Soliman, E.**, Safdari, M, Al-Haik, M., Reda Taha, M. M., "Effect of Carbon Nanotube Growth Conditions on Strength and Stiffness of Carbon and Glass Fiber Polymer Composites", *51st Structures, Structural Dynamics, and Materials AIAA Conference*, Orlando, FL. April 2010
- [50] Nabil Grace, Elin Jensen, Vasant Matsagar, **Eslam Soliman** and Joseph Hanson, "Use of Unbonded CFRP Strands in Transverse Post-Tensioning in Box-Beam Bridges", *International Conference on Advances in Concrete*, Structural and Geotechnical Engineering, Pilani, India, 2009. (Keynote Speech by Dr. Matsagar)
- [51] Salas, C., Neidigk, S., **Soliman, E.**, Mercer, D. and Reda Taha, M.M., "Creep and Relaxation of Osteoporotic Bones", *CD Proceedings of Annual Conference of Society of Experimental Mechanics*, Albuquerque, NM, June 2009.

RESEARCH PROJECTS

I have participated in research activities for following research projects.

- Research Assistant Professor Appointment "Agile Manufacturing for High value, low volume manufacturing" funded by Air Force Research Lab (AFRL), PI: Dr. Rafael Ferro, University of New Mexico, 2018-2023.
- Post-Doctoral fellowship "Optimization of Aerospace Tape Spring for Controlled Deployment" funded by Air Force Research Lab (AFRL), PI: Dr. Mahmoud Taha, University of New Mexico, 2016.
- Post-Doctoral fellowship "Engineering Viscoelastic Behavior of Deployable FRP Composites Using Nanoparticles" funded by Air Force Office of Scientific Research (AFOSR), PI: Dr. Mahmoud Taha, University of New Mexico, 2013-2016.
- PhD research "A New Generation of Polymer Concrete with Improved Impact and Fatigue Strength Using Carbon Nanotubes" funded by STC.UNM (University internal funding), PI: Dr. Mahmoud Taha, University of New Mexico, 2011.
- PhD research "Next Generation Composites Using Surface Grown Carbon Nanotubes" funded by Defense Threat Reduction Agency (DTRA), PI: Dr. Mahmoud Taha, University of New Mexico, 2008-2011.
- PhD research "Novel Structural Composite Using Surface Grown Carbon Nanotubes" funded by National Science Foundation (NSF), PI: Dr. Marwan Al-Haik, University of New Mexico, 2008-2011.

- MSc research project titled “Use of Unbonded CFCC for Transverse Post-tensioning of Side-By-Side Box-Beam Bridges” funded by *Michigan Department of Transportation (MDOT)*, PI: Dr. Nabil Grace, Lawrence Technological University, 2005-2008.

UNDERGRADUATE/GRADUATE STUDENTS SUPERVISION

I have co-supervised number of undergraduate and graduate students at UNM and Assiut University towards their academic degrees.

Student Name	Degree	Title/Topic	Graduation Date
Mohammed Amin (UNM)	PhD	Experimental Characterization, and Modeling for 3D-Printing of Polymer Concrete	2023
Mostafa Abd El-latif (Assiut University)	MSc	Nonlinear modeling of eccentric RC beam-column joints	2023
Jeremy Starr (UNM)	MSc	Synthesis and characterization of polymer modified C-S-H	2020
Mohammed Jaradat (UNM)	PhD	Experimental and numerical investigation of 3D-printed Viscoelastic Dampers	2022
Shreya Vemuganti (UNM)	PhD	Pseudo-ductile 3D printed fiber reinforced polymer composites	2021
Rahulreddy Chennareddy (UNM)	PhD	Retrofit of corroded culverts using GFRP liner	2019
Asmaa Fekry (Assiut University)	MSc	Behavior of steel hollow section under blast loads	2021
Ahmed Abd El-Latif (Assiut University)	MSc	Numerical modeling of compression behavior of foam concrete using representative volume element	2020
Essam Mahran (Assiut University)	MSc	Dynamic behavior of textile reinforced concrete using Split Hopkinson Pressure Bar	2019
Mahmoud Abd-El Emam (Assiut University)	MSc	Impact resistance of textile reinforced polymer concrete	2019

RESEARCH EXPERIENCE

- Current research activities at **UNM during visiting assistant professor employment** covered the following tasks.
 - Developing research proposals to Air Force Office of Scientific Research (AFSOR), Advanced Research Projects Agency-Energy (ARPA-E) for the Department of Energy (DOE), and University transportation centers (US DOT).
 - Involved in establishing new 3D concrete printing facility at Civil Engineering Materials and structural laboratory at UNM.
 - Involved in AFRL-UNM agile composite manufacturing research project for 3D printing of FRP composite materials.

- Supervising graduate students working in diverse research areas in materials and structures including textile reinforced polymer concrete, hybrid integration testing of composite joints, and zero cement synthetic C-S-H based mortar, and strengthening of deteriorated culverts.
- Research activities at **UNM during post-doctoral fellowship** covered the following tasks.
 - Development of research proposals for several funding agencies including the National Science Foundation (NSF), New Mexico Department of Transportation (NMDOT), and the Navy Research Office (NRO).
 - Involved in diverse research projects related to resilience of bridge systems, advanced structural nanocomposite recycled FRP composites, synthesis and characterization of C-S-H, reinforcing steel-concrete bond in bridge decks with nanomaterials, and controlling viscoelastic behavior of flexible composite joints in deployable aerospace applications.
- Research activities at **Assiut University in Egypt during assistant professor appointment** included the following tasks.
 - Supervising several M.Sc students who work in diverse research areas related to impact resistance of textile reinforced concrete, cellular/functionally graded concrete, fullerene nanocomposite cementitious materials, blast resistance of concrete slabs and steel structural elements, and multiscale molecular dynamics simulations.
 - Developing research proposals related to textile reinforced concrete panels and structural nanocomposites pipelines to Science & Technology Development Fund (STDF) in Egypt.
- **Ph.D. research** activities at Nano-Materials and SHM Laboratory, Department of Civil Engineering, University of New Mexico was funded by the Defense Threat Reduction Agency (DTRA) and National Science Foundation (NSF) covered the following tasks.
 - Fabrication and testing of advanced structural FRP nanocomposites materials under flexure, tension, shear, creep, fracture toughness and impact tests.
 - Casting and testing latex modified mortars and polymer concretes reinforced by nanomaterials.
 - Modeling the failure behavior of structural concrete elements and composites using the state-of-the art multicontinuum theory (MCT) technique integrated with ANSYS® finite element (FE) software package.
- **M.S. research** activities at Structural Testing Center (STC) and Center of Innovative Materials Research (CIMR), Civil Engineering Department, Lawrence Technological University, Michigan was funded by Michigan Department of Transportation (MDOT). The following skills are gained during the M.S. courses of study.
 - Design, construction, and testing of large-scale prestressed concrete bridge model pretensioned and transversely post-tensioned by steel and CFRP strands.
 - Rehabilitation of large-scale concrete bridges according to MDOT provisions.
 - Modeling the mechanical response of large-scale prestressed concrete bridges using ABAQUS® FE software package.
- **Training** at Institution of Hydraulic Engineering and Water Resources Management (IWW), Aachen University of Technology (RWTH-Aachen), Aachen, Germany. (July 2002-August 2002)
 - Involved in experimental modeling for investigating the flood wave propagation due to dike break or failure of mobile flood protection walls.

- Used high speed CCD-camera to determine the front wave position and ultrasonic sensors to determine the water depth.

PEER REVIEW

- Associate Editor - ASCE Journal of Materials in Civil Engineering (2021-present)
- Peer review manuscripts for the following international journals and conference proceedings
 - Journal of Materials in Civil Engineering, ASCE
 - Journal of Composite Materials, SAGE
 - Journal of Construction and Building Materials, Elsevier
 - American Concrete Institute Special Publications (SP), ACI
 - ASTM Journal of Testing and Evaluation, ASTM
 - Journal of Material Sciences and Applications, JScholar
 - Results in Engineering Journal, Elsevier
 - Polymers, MPDI
 - Fibers, MPDI
 - Materials, MPDI
 - Applied Sciences, MPDI
 - Sustainability, MPDI
 - Aerospace Science and Technology, Elsevier
 - Case Studies in Construction Materials, Elsevier
 - Journal of Engineering Sciences, Egyptian Knowledge Bank (EKB).
 - Journal of Traffic and Transportation Engineering, Elsevier
 - Journal of Science of Advanced Materials, American Scientific Publisher (ASP)
 - Measurement Journal, Elsevier
 - The open Construction and Building Technology Journal, Bentham Open
 - International Journal of Materials and Structural Integrity, Inderscience
 - Transactions of the Indian Institute of Metals, Springer
 - Structures Journal, Elsevier
 - Journal of Manufacturing Processes, Elsevier
 - International Congress on Polymers in Concrete (ICPIC 2018) Conference

TEACHING INTERESTS

- Statics
- Structural Analysis
- Mechanics of Materials
- Steel Design
- Fracture Mechanics
- Reinforced Concrete Design
- Prestressed Concrete Design
- Bridge Engineering
- Design of Concrete Structures with FRP
- Finite Element Analysis
- Mechanics of Composite Materials
- Fuzzy Logic and Artificial Intelligence (AI)
- Civil Engineering Materials

TECHNICAL REPORTS, WORKSHOPS, AND CONFERENCE ORGANIZATION

- Contributing Author: Infrastructure Resilience Division of ASCE. (2021, May). Hazard-Resilient Infrastructure: Analysis and Design. Reston, VA: American Society of Civil Engineers, May 2021.
- Member and Moderator in International Congress on Polymers in Concrete (ICPIC 2018) that was held by University of New Mexico in conjunction with George Mason University April, 29th to May 1st. <http://icpic2018.unm.edu/>
- Book Chapter: **Eslam Soliman**, Usama Kandil, Mahmoud Reda Taha “Improved Strength and Toughness of Carbon Woven Fabric Composites with Functionalized MWCNTs” in Carbon Fibers, Special issue in *Materials*, MPDI (2015).
- Nabil Grace, Elin Jensen, Vasant Matsagar, Mena Bebawy, **Eslam Soliman** and Joseph Hanson, "Transverse Post-Tensioning of Side-by-Side Box-Beam Bridges", Testing and Research Section, Construction and Technology Division, Michigan Department of Transportation (MDOT), USA, 2004-0105, February 2008.
- Mahmoud Reda Taha and **Eslam Soliman** “Quantifying Infrastructure Resilience Using Structural Health Monitoring Data”, US-EGYPT Workshop Towards Resilient and Sustainable Infrastructure Development at the New Suez Canal Region in Egypt funded by National Science Foundation (NSF), Cairo, Egypt, December 2015.
- Egyptian Petroleum Research Institute (EPRI) Workshop entitled “Next Generation of Polymer Nanocomposites for Sustainable Development in Egypt” funded by Science and Technology Development fund (STDF), December 2016.

AWARDS AND HONORS

- Induction into **Phi Kappa Phi & Sigma Xi**-UNM chapter, national academic honor societies dedicated to the recognition and promotion of academic excellence in all fields of higher education (2011).
- **Outstanding Graduate Student Award** for the academic year (2010-2011) by the School of Engineering (SOE), University of New Mexico, Albuquerque, NM.
- **Research Assistantship** for pursuing a Doctor of Philosophy in Civil Engineering at The University of New Mexico, Albuquerque, NM funded by the Defense Threat Reduction Agency (DTRA), Grant No. HDTRA1-08-1-0017 P00001, and National Science Foundation (NSF), Grant Award No. CMMI-0800249 (2008-2011)
- **Research Assistantship** for pursuing a Master of Science in Engineering at Lawrence Technological University, Southfield, MI, USA funded by Michigan Department of Transportation (MDOT), Contract No. 2004-0105 (2005-2008)
- **First Rank and Honor’s Degree** for Bachelor of Science in Civil Engineering, Faculty of Engineering, Assiut University, Assiut, Egypt. (2003)
- German Academic Exchange Service’s **DAAD Fellowship** for practical training at Aachen University of Technology (RWTH-Aachen), Aachen, Germany. (July-August 2002)

AFFILIATIONS

- Associate Member, American Society of Civil Engineering, USA (August 2020)
- Member of the Academy of Scientific Research and Technology-Housing and Building Committee, Egypt (July, 2018)
- Member of Scientific Committee in International Congress on Polymers in Concrete (ICPIC 2018), (April 29-May 1, 2018)
- Engineering in Training (EIT) license, New Mexico State (December 2011)
- Member, Honor Society of Sigma Xi (December 2011)
- Member, Honor Society of Phi Kappa Phi (April 2011)
- Member, American Institute of Aeronautics and Astronautics (AIAA) (April 2010)
- Member, American Concrete Institute (ACI) (March 2010)
- Member, Society of Experimental Mechanics (SEM) (May 2009)
- Member, Egyptian Syndicate of Engineers (September 2003)
- Member, International Association for the Exchange of Students for Technical Experience (IAESTE) (May 2002)

RESEARCH INTERESTS

- Resilience and fragility of civil infrastructures under multi-hazard scenarios.
- Use of nanomaterials in multi-functional fiber composites, polymer composites, and cementitious materials.
- 3D printing of concrete and FRP composite materials.
- Multi-scale modeling and molecular dynamics simulations for structural nanocomposites.
- Real time Hybrid integration testing of structural elements.
- Structural health monitoring and structural evaluation of reinforced and prestressed concrete slabs and bridges with external and internal FRP strengthening.
- Viscoelastic behavior of composite joints and components in aerospace deployable structures.
- Progressive failure analysis and fracture mechanics of FRP composite and concrete materials and structures under environmental and/or extreme loadings conditions.
- Fuzzy systems and artificial neural networks for solving non-linear engineering problems.

CONSULTING EXPERIENCE

Involved in consulting several projects in USA, Saudi Arabia, Canada, UAE, and Egypt related to materials and structural design with AIMT Engineering Service Inc., USA and with The Engineering Studies and Consultation Center, Assiut University, Egypt. The projects include.

- [1] Rehabilitation Design for Stanley Park Bridge, British Colombia, Canada (w/ AIMT Engineering Service) – 2023.
- [2] Rehabilitation Design for Scott Creek Logugheed Bridge, British Colombia, Canada (w/ AIMT Engineering Service) – 2023.
- [3] Structural design of Bradner overpass prestressed concrete bridge, British Columbia, Canada (w/ AIMT Engineering Service) – 2022.
- [4] Structural design of various wood, concrete, masonry building structures in New York and New Mexico (w/ AIMT Engineering Service) – 2017-present.
- [5] Strengthening Design of 16th Avenue Prestressed Concrete Bridge, Calgary, Canada (w/ AIMT Engineering Service) – 2022.

- [6] Develop new mathematical formulation for distributed temperature sensing (DTS) system in Mechanical Integrity Test (MIT) for borewells, Canada (w/ AIMT Engineering Service) –2017-2021
 - [7] Review of the structural design and construction of the Navy Lodge Expansion at the Naval Station Rota, Spain (w/ AIMT Engineering Service) –2017
 - [8] Review of the structural design of the deck slab of Sherwood Park Freeway East-North Ramp 2 bridge, Edmonton, Canada (w/ AIMT Engineering Service) –2016
 - [9] Evaluation for the structural design of FRP manhole for underground sewer systems for Sewer Shield Composite LLC, AZ, USA (w/ AIMT Engineering Service) – 2014 to 2015.
 - [10] Dynamic analysis of UPPER ZAKUM 750 Sea Water Intake (SWI) structure, United Arab Emirates (w/ AIMT Engineering Service) – 2014 to 2015.
 - [11] Rehabilitation and strengthening of faculty of education building in Aswan University, Aswan, Egypt (w/ The Engineering Studies and Consultation Center, Assiut University) –2013.
 - [12] Supervising material testing for many construction materials (steel rebars, aggregates, cement, concrete cubes, tiles) in the civil engineering materials Laboratory, Assiut, Egypt (w/ The Engineering Studies and Consultation Center, Assiut University) –2013 to present.
 - [13] Structural design and finite element modeling for Hamriyah Power Station, Seawater intake and outfall system, including pipe & cable bridge and Overflow pit, United Arab Emirates (w/ AIMT Engineering Service) – 2013.
 - [14] Structural design for NEL Trestle Road Prestressed Concrete Bridge, Fujairah, United Arab Emirates (w/ AIMT Engineering Service) – 2012.
 - [15] Strengthening of Bridge Intersection # 2 along King Fahd Dammam Road, Dammam, Saudi Arabia (w/ AIMT Engineering Service) – 2012.
 - [16] Fatigue testing, FE simulations and design for Transpo[®] Industries, Inc. metallic couplers, USA (w/ AIMT Engineering Service) –2011.
 - [17] Finite element modeling for some structural components in Al Qurayyah Power Planet, Saudi Arabia (w/ AIMT Engineering Service) –2010 to 2011.
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