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Biography

Dr. Sary A. Malak, Ph.D., P.E., NSPE, ACI, ASCE, HPFRCC and Assistant Professor at the Department of Civil and Environmental Engineering, Notre Dame University, Louaize, Lebanon. M.Sc. in Structural Engineering at University of Illinois Urbana Champaign. Ph.D. at Northeastern University, Boston, MA. ACI Committee 544 FRC Properties, 544-D Mechanical Properties, 544-E Structural Use, and 370 Blast and Impact Effects. Interest includes "Use of fiber composites in mitigating structures against blast loads".
Previously an adjunct professor at Northeastern University, Boston, Massachusetts for almost 10 years. Technical manager for Hourie Enterprises, Inc. Lebanon responsible for all technical related issues for all different projects and for the development of the FRP joint ventured with Bechtel Corporation for the new construction of the new US Embassy in Lebanon. A Senior Associate with Weidlinger Associates, Boston Massachusetts acquired by Thornton Tomasetti, Inc. which is a leading structural engineering firm that focuses on the design and rehabilitation of infrastructures, bridges and buildings including blast resistant design. Particular experience in Blast Engineering, Risk, Security and Vulnerability Assessment. Joint ventured with Parsons PTG. Bechtel, Parsons Brinckerhoff and Arup in the rehabilitation of the transit systems, bridges, subway stations, and the Reconstruction of the World Trade Center in the NY and New Jersey region. Clients included MTA (Metropolitan Transportation Authority), NYCT (New York City Transit) LIRR (Long Island Railroad, PANYNJ & PATH (Port Authority of NY and NJ). Construction Design Manager for the Central Artery Project in Boston for the Massachusetts Highway Department. Project Manager and estimator for Stone and Webster on the TVA Browns Ferry Nuclear Power Plant (BFNP). Expertise in High Performance Fiber Reinforced Cement Composites to resist high impulsive loadings. Member of the ASCE (American Society of Civil Engineers) and NSPE (National Society of Professional Engineers) and the HPFRCC (High Performance Fiber Reinforced Cement Composites), Massachusetts Professional Engineers License (SE), Massachusetts Builders Construction License (CL), Massachusetts AASHTO certification.

Peer-reviewed Journals

- Krstulovic, N., Malak, S. "Tensile Behavior of Slurry infiltrated Mat Concrete" ACI Material Journal, Vol. 94, No.1, Jan-Feb. 1997 pp. 39-46
- Krstulovic, N., Malak, S."Micromechanical Tensile Behavior of Slurry Infiltrated Continuous-Fiber-Mat reinforced Concrete (SIMCON)" ACI Material Journal, Vol. 94, No.5, Sept.- Oct. 1997 pp. 373-384
- Oluokun, F., Malak, S. "Toughness, Ductility, Flexural, and Compressive Behavior of Metallic Aggregate Concrete" ACI Material Journal, Vol. 96, No.3, May-June 1999. pp. 320-330
- Oluokun, F., Malak, S."Some Parametric Investigations of the Tensile Behavior of Slurry Infiltrated Mat Concrete (SIMCON)" Proceedings No.6 of the Third International RILEM Workshop for High Performance Fiber Reinforced Cement Composites. May 1999, pp. 271-297
- Malak, S., Krtuovic-Opara , N. "Micromechanical Tensile Behavior of SIMCON with Inclined Fibers", ACI Materials Journal, Vol. 116, Iss. 2, (Mar 2019): 69-80

- Malak S., Krstulovic-Opara N., "Modeling Material Response of Fiber Composites used for the Retrofit of Existing Concrete Structures under Blast Loadings "ACI Technical Publication", Dennis Mertz Symposium on Design and Evaluation of Concrete Bridges, SP-340-7, April 2020, pp. 114-136
- Malak, S. "Computational and Modeling Design Techniques Used in the Progressive Collapse Analysis of Structures", 2019 Fourth International Conference on Advances in Computational Tools for Engineering Applications (ACTEA)
- Malak S., Krstulovic-Opara N., R. Sarieldine," Compressive Stress Strain Model for Laterally Confined Concrete Columns with Steel Fibrous Composites", ACI Materials Journal, Accepted for Publication 11/13/2020
- Malak S., S. Kazma,"Use of Recyclable Mineral Composite Plank (RMCP) for the Construction and Retrofit of Building Structures"," Case Studies in Construction Materials", 11/30/2020, Elsevier, Under Review
- Malak S., "Tensile Stress Strain Response of a Novel Recyclable Mineral Composite Plank (RMCP)", Reinforced Plastics and Composites, 11/30/2020, Direct Science, Under Review
- Malak S., Krstulovic-Opara N., Al Ashkar Christ, "Flexural Behavior of Reinforced Concrete Beams and Slabs Retrofitted with Fibrous Composite: ASCE Structural Journal, Under investigation
- Malak S., "Flexural Behavior of Reinforced Concrete Beams and Slabs Retrofitted with Recyclable Mineral Composite Plank (RMCP)", ASCE Structural Journal, Under investigation
- Malak S., Krstulovic-Opara N." Computational and Modeling Methods for the Blast Analyses of Concrete Structures Retrofitted with Fiber Reinforced Composites", Concrete and Reinforced Concrete Magazine (Beton i Zhelezobeton), under works
- Malak S., " Lamination, Fiber Orientation and Temperature Effects on the Tensile Response of Recyclable Mineral Composite Plank (RMCP)", Composites B, Under review
- Malak S," The Compressive Behavior of Laterally Reinforced Concrete Columns with Recyclable Mineral Composite Planks (RMCP)", Construction and Building Materials, Under Investigation
- Malak S., Hachem G. " Investigation of the flexural response of marble tiles reinforced with FRP Composites", Construction and Building Materials, Under investigation
- Malak, S. "Experimental Investigation of Rebar Pullouts in Low and High Performance Fiber Reinforced Cement Composites"- Under investigation
- Malak, S. "Modeling of Rebar Pullouts in Low and High Performance Fiber Reinforced Cement Composites"- Primal and Dual Problems –Under investigation
- Malak, S., Harb J., Krstulovic-Opara N." Experimental investigation of the impact of concrete slabs retrofitted with fibrous composite", ACI Structural Journal
- Malak, S., Harb J., Krstulovic-Opara N., Ishak J."Analytical Investigation of the impact of concrete slabs retrofitted with fibrous composite", ACI Structural Journal
- Malak, S. "Experimental Investigation of SIMCON Fiber Pullouts in High Performance Fiber Reinforced Cement Composites"- Future proposal
- Malak S., "Tensile behavior of Low and High Performance Synthetic Forta-Ferro", Construction and Building Materials, Under Investigation.
- Malak S., Zamajtis J., Krstulovic-Opara N., Luke C., Bryan C. " Comparative Study of the Compressive Stress Strain Response of Cylinders Versus Prisms', Concrete International, Under investigation
- S. Malak, Krstulovic-Opara N. "The effect of Vertical and Horizontal Lateral Confinement on the Compressive Stress Strain Response of Concrete Confined with Wire Mesh", ACI Materials Journal, Under investigation
- S. Malak and N. Krstulovic-Opara, "Design Procedures for Predicting Complete Load-Displacement Column Response Using Developed Stress-Strain Model of Confined Concrete"- ACI Structural Journal-Future Work
- Malak S," The Flexural Behavior of Retaining Walls Concrete Retrofitted with Recyclable Mineral Composite Planks (RMCP)", Construction and Building Materials, Under Investigation

Peer-reviewed Conference Proceedings

- June 1997 Presentation for the Department of Civil and Environmental Engineering on the Tensile, Compressive and Micromechanical Tensile Behavior of Slurry Infiltrated Mat Concrete (SIMCON). Doctorate Dissertation.
- May 1999 Mainz, Germany, Proceedings PRO 6, Proceedings of the Third International RILEM workshop, High Performance Fiber Reinforced Cement Composites (HPFRCC 3). Some Parametric Investigations of the Tensile Behavior of Slurry Infiltrated Mat Concrete (SIMCON).
- Sept. 2002- Presentations for the Port Authority of New York and New Jersey, Metropolitan
- Sept. 2003 Transportation Agencies of New York and the Massachusetts Transportation Authority on the use of high end technical 3D finite element computer software programs for blast mitigations of their infrastructures.
- June 2013 Presentation for the Nuclear Regulatory Committee on the use of Beyond Design Basis Structures against tornado missile and wind loads and high hurricane winds at their nuclear facilities. Presentation included the use of High End Technical Analyses in establishing design criteria for Beyond Design Basis Structures.

- July 2013 Presentation to the US blast committee in New Mexico on the use of Fiber Reinforced Polymers for retrofitting structures to resist blast effects. Introducing empirical equations for flexural and shear capacities to resist dynamic impulsive loadings.
- April 2020, ACI Conference, Presentation on the use of fibrous composites to Resist Blast, Dennis Mertz Symposium

NDU Services

- Department Civil Environmental Engineering/Departmental Curriculum Committee DCEE/DCC secretary
- Outcome Assessment Committee (OAC)
- Faculty Curriculum Committee (FCC)
- Student Advisory Committee (SAC)

Reviewer

- ACI Material Journal
- ACI Structural journal
- ASCE Material Journal
- Case Studies for Construction Materials
- Construction and Building Materials
- Reinforced Plastics and Composites

Peer Review of Journals

- Zitouni Salim1, Naceri Abdelghani1 and Maza Mekki1, Effect of The Presence of Clay and Limestone Dust Particles on the Physical and Mechanical Characteristics of Concrete", Geo-Materials Development Laboratory, Technology Faculty, Civil Engineering Department, M'sila University
- Proposal Review for LAU by CNRS "PMC Materials for Underwater Construction and Repair Works" Dr. Najib Nicolas Geryes
- Ali F., Ali M., Ali K., Hassan H., Mohammed a. T. " Radiosonde Analysis Software in the Upper Atmosphere", 2019 Fourth International Conference on Advances in Computational Tools for Engineering Applications (ACTEA)
- Dapper P.R., Ehrenbring Z., Christ R., Pacheco F., Khayat K., Wue Z., Tutikian B. F., "Resistance to projectile impact of ultra-high performance concrete plates made with low cement, Construction and Building Materials, 11-18-2018
- D. Saini, B. Shafei, "Comparative study of Concrete Constitutive Models for Low Velocity Impact Simulations, International Journal of Impact Engineering, 2019, Elsevier

Exhibitions, Competitions and Creative Work

- Local: ACI Competition for designing the highest-impact-load resistant plain or reinforced concrete Egg Protection Device (EPD). Report on concrete's impact and other real-life aspects which an EPD simulates. September-2017.
- ASCE Bridge Competition Bronze Medal Winners, 2018

Professional License

- Massachusetts Construction license (CS-056640),
- Structural Professional Engineer Massachusetts License (# 37824 - ST)

Professional Affiliations

- National Society of Professional Engineers
- American Society of Civil Engineers

- ACI Member
- Member of the High Performance Fiber Reinforced Cement Committee

Awards and Honors

- June 1997 Teaching award Northeastern University, Boston, Ma.