YEN-FANG SU

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RESEARCH INTERESTS

Advanced Low-Carbon High Durability Cementitious Materials and Structures
3D Composite Printing, Digital Construction, Meta Construction Materials
Intelligent IoT sensor and sensing approach, Robotic based SHM, Artificial Intelligence

EDUCATION / PROFESSIONAL DEVELOPMENT

- **Ph.D. in Civil Engineering (Materials) 2021**
  PURDUE UNIVERSITY, WEST LAFAYETTE, INDIANA, USA
- **M.S. in Civil Engineering (Structural Engineering) 2014**
  NATIONAL CENTRAL UNIVERSITY, TAOYUAN, TAIWAN
- **B.S. in Marine Environment and Engineering 2012**
  NATIONAL SUN YAT-SEN UNIVERSITY KAOHSIUNG, TAIWAN

PROFESSIONAL EXPERIENCE

ASSISTANT PROFESSOR, 2022 Aug.-Current
Department Of Civil and Environmental Engineering, LOUISIANA STATE UNIVERSITY, LA, USA

POSTDOCTORAL RESEARCH ASSOCIATE, 2021–2022
Professor Abir Al-Tabbaa Lab, Department of Engineering, UNIVERSITY OF CAMBRIDGE, UK

GRADUATE RESEARCH ASSISTANT/TEACHING ASSISTANT, 2017-2021
Professor Luna Lu Lab, Department of Civil Engineering, PURDUE UNIVERSITY, IN, USA

STRUCTURAL ENGINEER, 2014-2017
Ship And Ocean Industries R&D Center, NEW TAIPEI CITY, TAIWAN

GRADUATE RESEARCH ASSISTANT, 2012-2014
Professor Chung-Chan Hung Lab, NATIONAL CENTRAL UNIVERSITY, TAOYUAN, TAIWAN

PUBLICATIONS / CITATIONS

***GOOGLE SCHOLAR CITATIONS* >370, H-INDEX: 11**

1. C. Huang, **Y.-F. Su[1]**, P. Baah, T. Nantung, N. Lu., "Investigation of medium-term self-healing performance of strain-hardening cementitious composites incorporated with colloidal nano silica", *Construction and Building Materials 348*, 2022 (**[1]co-first author**)
2. **Y.-F. Su,** G. Han, C. Huang, T. Nantung, N. Lu. "Field implementation of piezoelectric sensor-based sensing technique for in-situ concrete compressive strength evaluation", *ACI Materials Journal, 118(1),* 2021
3. G. Han, **Y.-F. Su**, T. Nantung, N. Lu., "Mechanism for Using Piezoelectric Sensor to Monitor Strength Gain Process of Cementitious Materials with the Temperature Effect", *Journal of Intelligent Material Systems and Structures*, 32 (10), 2021
4. G. Han, **Y.-F. Su**, S. Ma, T. Nantung, N. Lu. "Exploration of in-situ rheological properties monitoring of 3D printing cementitious materials through piezoelectric-based electromechanical impedance (EMI) technology", *Engineered Science*, 2021
5. K. Soga, P. G Hubbard, Z. Chen, M. R Taha, D. H Murcia, P. Tang, B. Glisic, O. Ozbulut, C. Ford, N. Lu., and **Y.-F. Su**, "Evaluation of Emerging Technologies for System Resilience

Contributions: Case Studies", *Natural Hazards Review*, 2021 (Under review)

6. **Y.-F. Su**, G. Han, T. Nantung, N. Lu. "Novel methodology on direct extraction of the strength information from cementitious materials using piezo-sensor based electromechanical impedance (EMI) method", *Construction and Building Materials*, 259, 2020
7. **Y.-F. Su**, C. Huang, H.G. Jeong, T. Nantung, P. Baah, J. Olek, N. Lu., "Autogenous healing performance of internal curing agent based self-healing cementitious composite", *Cement and Concrete Composites*, 2020, 103825
8. **Y.-F. Su**, G. Han, Z. Kong, T. Nantung, N. Lu. "Embeddable piezoelectric sensors for strength gain monitoring: the influence of coating materials", *Engineered Science*, 11, 2020
9. **Y.-F. Su**, G. Han, A. Amran, T. Nantung, N. Lu. "Instantaneous monitoring the early age properties of cementitious materials using PZT-based electromechanical impedance (EMI) technique"*, Construction and Building Materials*, 225, 2019
10. **Y.-F. Su**, R. R. Kotian, N. Lu. "Energy harvesting potential of bendable concrete using polymer based piezoelectric generator.", *Composites Part B: Engineering*, 153, 2018.
11. Y. Feng, **Y.-F. Su**, N. Lu., S. Shah. "Meta Concrete: Exploring Novel Functionality of Concrete Using Nanotechnology", *Engineered Science*, 8, 2019 (**Featured as cover page**)
12. G. Han, **Y.-F. Su**, Y. Feng, N. Lu., "Approaches for increasing the β-phase concentration of polyvinylidene fluoride (PVDF) nanofibers", *ES Materials & Manufacturing*, 6, 2019
13. C.-C. Hung, **Y.-F. Su**, Y. M. Su. "Mechanical properties and self-healing evaluation of strain-hardening cementitious composites with high volumes of hybrid pozzolan materials." *Composites Part B: Engineering*, 133, 2018.
14. C.-C. Hung, **Y.-F. Su**, H.-H. Hung. "Impact of natural weathering on medium-term self-healing performance of fiber reinforced cementitious composites with intrinsic crack-width control capability." *Cement and Concrete Composites*, 80, 2017
15. C.-C. Hung, **Y.-F. Su**. "Medium-term self-healing evaluation of Engineered Cementitious Composites with varying amounts of fly ash and exposure durations." *Construction and Building Materials*, 118, 2016
16. C.-C. Hung, **Y.-F. Su**. "On Modeling Coupling Beams Incorporating Strain-hardening Cement-based Composites." *Computers and Concrete*. 12(4), 2013
17. C.-C. Hung, **Y.-F. Su**, K.-H. Yu. "Modeling the Shear Hysteretic Response for High Performance Fiber Reinforced Cementitious Composites." *Construction and Building Materials*. 41, 2013

TECHNICAL REPORT

1. **Y.-F. Su**, G. Han, N. Lu., "Determining the Optimal Traffic Opening Timing Through an In-Situ NDT Method for Concrete Early Age Properties", (*Joint Transportation Research Program Publication No. FHWA/IN/JTRP*-2020/02). West Lafayette, IN: Purdue University. 2020
2. C. Huang, **Y.-F. Su**, N. Lu., "Self-healing Cementitious Composites (SHCC) with Ultra-High Ductility for Concrete Pavement and Structure Rehabilitation", (*Joint Transportation Research Program Publication No. FHWA/IN/JTRP*-2021/36). West Lafayette, IN: Purdue University., 2021

CONFERENCE PRESENTATIONS

1. **Y.-F. Su,** Q. Chen, R. Bagonyi, A. Al-Tabbaa, "Data-Driven Model for Self-Healing Prediction of Cementitious Materials", *The Resilient Materials 4 Life (RM4L) Showcase Event, London, UK, 2022*
2. C. Vlachakis, **Y.-F. Su**, A. Al-Tabbaa, H.M Taha, R. Ball, K. Paine "Sensors and self-sensing for cementitious system", *The Resilient Materials 4 Life (RM4L) Showcase Event, London, UK, 2022*

3. **Y.-F. Su,** Q. Chen, R. Bagonyi, A. Al-Tabbaa (Oral presentation), "Chemically informed machine learning model for self-healing performance prediction of mineral additive based cementitious materials," *8th International Conference on Self-Healing Materials*, Milano, Italy, 2022
4. **Y.-F. Su**, N. Lu., (Oral presentation), "Colloidal nano-silica for low carbon self-healing cementitious materials," *The ACI Spring Convention*, Orlando, FL, USA 2022
5. **Y.-F. Su**, (Invited Talk) "AI-enabled sensing technology for sustainable infrastructures", *Cambridge Zero Research Symposia, Virtual Conference, University of Cambridge,* 2021
6. **Y.-F. Su**, N. Lu., (Oral presentation) "Machine Learning Based Concrete Properties monitoring through Nano sensors", *The ACI Concrete Virtual Convention,* 2021
7. **Y.-F. Su**, G. Han, N. Lu., (Oral presentation) "Energy Harvesting Cementitious Materials through Nano-materials Incorporations", *The ACI Concrete Virtual Convention,* 2020
8. G. Han, **Y.-F. Su**, N. Lu., "Towards high efficiency PVDF nano-fiber based energy harvester: the influence of the contact and the coating", (Oral presentation), *Proc. SPIE 11379, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, 2020
9. **Y.-F. Su**, G. Han, T. Nantung N. Lu., "Field implementation of using piezoelectric sensor-based sensing technique for in-situ concrete compressive strength evaluation", (Poster), 99th *TRB Annual Meeting*, Washington D.C., USA, 2020
10. **Y.-F. Su**, G. Han, N. Lu., "Machine Learning Guided Modeling for Concrete Strength Prediction using Electromechanical Impedance (EMI) Technique." (Poster), *The ACI Concrete Convention and Exposition*, Cincinnati, OH, USA, 2019
11. **Y.-F. Su**, G. Han, Zhihao Kong, N. Lu., "In-Situ Concrete Early Age Strength Monitoring using Piezoelectric Based Sensors." (Poster), *The ACI Concrete Convention and Exposition*, Cincinnati, OH, USA, 2019
12. C. Huang, **Y.-F. Su**, "Autogenous healing performance of zeolite based self-healing cementitious materials" (Poster), *The ACI Concrete Convention and Exposition*, Cincinnati, OH, USA, 2019
13. G. Han, **Y.-F. Su**, N. Lu., "Temperature effect on electromechanical impedance (EMI) method for very early age concrete properties monitoring" (Poster), *The ACI Concrete Convention and Exposition*, Cincinnati, OH, USA, 2019
14. **Y.-F. Su**, G. Han, N. Lu., "A machine-learning based electromechanical impedance (EMI) method for concrete slab strength monitoring." (Poster), *10th Advances in Cement-Based Materials Conference*, Urbana- Champaign, Illinois, USA, 2019
15. G. Han, **Y.-F. Su**, N. Lu., "Temperature and humidity effect on piezoelectric materials based electromechanical impedance (EMI) method for concrete properties monitoring." (Poster), *10th Advances in Cement-Based Materials Conference*, Urbana- Champaign, Illinois, USA, 2019
16. C. Huang, **Y.-F. Su**, N. Lu., "Evaluating the self-healing behavior of engineered cementitious materials incorporating the internal curing agent." (Oral presentation), *10th Advances in Cement-Based Materials Conference*, Urbana- Champaign, Illinois, USA, 2019
17. **Y.-F. Su**, G. Han, A. Amran, S. Graham, N. Lu. "Investigating polymer coated piezo-ceramic sensor for the very early strength monitoring of cementitious materials." (Oral presentation) *Proc. SPIE 10970, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, Denver, Colorado, USA, 2019
18. **Y.-F. Su**., A. Amran, T. Nantung, N. Lu. "Systematically investigation of using electromechanical impedance (EMI) technique for monitoring the very early age properties of cementitious materials." (Poster), 98th *TRB Annual Meeting*, Washington D.C., USA, 2019
19. **Y.-F. Su**, Y. Feng, N. Lu. "Exploring Energy Harvesting Potentials of Cementitious Materials through Nanotechnology." 6th *The triennial International Symposium on Nanotechnology in Construction (NICOM),* Hong Kong, China, 2018
20. **Y.-F. Su**, N. Lu, "Evaluation of the Compressive Strength of Cement Paste Blended with Supplementary Cementitious Materials using a Piezoelectric-Based Sensor", (Invited talk), Anna Maria Workshop XIX, Holmes Beach, FL, USA, 2018

21. **Y.-F. Su**, A. Amran, N. Lu. "Determining the Optimized Traffic Opening Time using PZT Sensors for Concrete Early Strength Monitoring." (Poster) *Gordon Research Conferences,* Hong Kong, China, 2018
22. **Y.-F. Su**, C.-C. Hsieh, M.P. Hsieh, C.-W. Huang, Y.-P. Zhou, C.-P. Chen, "Global Strength Analysis of a Self-Elevating Offshore Wind Turbine Installation Vessel (WTIV)" (Oral presentation), *Proceeding of the 28th Conference on Naval Architecture and Marine Engineering*, Taipei, Taiwan, 2016
23. C.-C. Hung, **Y.-F. Su**. (Oral presentation), "Development of Strain-hardening Cementitious Composites Using Locally Available Materials." *Proceeding of the International Conference on Civil and Environmental Engineering*. Dalian, China, 2013
24. C.-C. Hung, **Y.-F. Su**. (Oral presentation), "Uniaxial Tensile Properties of Seismically Sustainable Cement-Based Composites." *Proceeding of 2013 Taiwan-Japan Joint Symposium on the Advancement of Urban Earthquake Hazard Mitigation Technology*. Taoyuan, Taiwan, 2013.

MENTORSHIP / TEACHING

- ***Instructor*** *(Statically Indeterminate Structures – CE7405),* **Louisiana State University 2022**
- ***Instructor*** *(Civil Engineering Materials Lab– CE335),* **Purdue University 2021**
- ***Teaching Assistant*** *(Civil Engineering Materials – CE497),* **Purdue University 2017**
- ***Teaching Assistant*** *(Applied Mechanics),* **National Central University 2013 –2014**
- ***Graduate Mentor*** **of Undergraduate Research 2020, 2021**
  Purdue University
- ***Graduate Mentor of Summer Undergraduate Research Program (SURF)*** **2019,2018**
  Purdue University
- ***Graduate Mentor of Summer Duke Energy Academy Program*** **2018**
  Duke Energy and Purdue University

AWARDS / HONORS

- ASCE GameChanger project, ASCE, 2021
- William and Mary Goetz Graduate Scholarship, Purdue University, 2020
- PGSG Travel Grant (For attending academic conferences), Purdue University, 2020.
- ACPA Concrete Pavement & Materials Science Scholarship, American Concrete Pavement Association, 2018, 2019
- Engineering and Technology Scholarship, China Engineering Consultants, 2013
- Outstanding Student Scholarship, Sinotech Engineering Consultants, 2013
- Outstanding Community Cadres Scholarship, National Sun Yat-sen University, 2009

PROFESSIONAL SERVICE

- Applied Science, Guest Editor
- Construction and Building materials, Reviewer
- Composite Part B: Engineering, Reviewer
- Transportation Research Board/ Transportation Research Record, Reviewer
- Buildings, Reviewer
- ES Materials & Manufacturing, Reviewer
- Engineering Research Express, Reviewer
- Measurement Science and Technology, Reviewer

PROFESSIONAL AFFILIATION

- American Concrete Institute, Member, USA
- American Society of Civil Engineers, Member, USA
- Transportation Research Board, Member, USA
- The International Society for Optical and Photonics (SPIE), Member, USA
- International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM), Member, EU