

Dr. XIAN Xiangping

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Language: English; Cantonese; Mandarin.

EDUCATION BACKGROUND

- From 2023.5 Cambridge University Marie Sklodowska-Curie Future Roads Fellow
- 2021.03-Present McGill University (MU) Postdoctoral Researcher
- 2022.09-2022.12 University of Toronto (UofT) Part-time Postdoctoral Fellow
- 2017.09-2021.04 McGill University (MU) **Ph.D.** Civil Engineering
- 2015.09-2017.05 McGill University (MU) M. Eng. Civil Engineering
- 2009.09-2013.06 Shenzhen University (SZU) B. Eng. Civil Engineering

ACHIEVEMENTS & AWARDS

- 2022 Outstanding Paper 2022 Award, *Materials and Structures*
- 2017-2020 McGill Engineering Doctoral Award (**MEDA**)
- 2014 **Inspirational and Typical examples of Outstanding students** of Guangdong Province of China (**25 out of 442,000 undergraduates**)
- 2014 Shenzhen Universiade International Scholarship
- 2013 Outstanding Graduate of Shenzhen University
- 2012 **Five-Star Volunteers** of Guangdong Province
- 2011 National Scholarship

TEACHING AND PROFESSIONAL EXPERIENCE

- 2023.01- Present **Lab Lecturer and Instructor**, McGill University
CIVE 207-Solid Mechanics, giving lab lectures and teaching lab skills.
- 2022.01-2022.04 **Course Lecturer**, McGill University
CIVE 512-Advanced Materials, (Graduate level).
- 2017.01-2021.04 **Teaching Assistant**, McGill University
CIVE 207 Solid Mechanics (Undergraduate level);
- 2020.01-2020.04 **Teaching Assistant**, McGill University
CIVE 512-Advanced Materials, (Graduate level).
- 2019.09-2020.04 **Lab Instructor**, McGill University
Gave demonstrations and taught students the labs techniques;

- 2019.05-2020.05 **President** of Civil Engineering Graduate Student Society
McGill University
- 2013.07-2015.08 **Structural Engineer**,
Shenzhen Machinery Institute Architectural Design Co.
Shenzhen, China

PUBLICATIONS

1. **Xian, X.**, Mahoutian, M., Shao, Y., 2023. Production of concrete pipes by carbonation curing in an inflatable enclosure. **Constr. Build. Mater.** 363, 129861. <https://doi.org/10.1016/j.conbuildmat.2022.129861>

Contributions of the Research: Ambient pressure carbonation curing can be used to replace traditional steam curing in order to reduce energy consumption, improve concrete performance and sequester carbon dioxide in the production of real concrete products (i.e., OPC-based concrete pipes).

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

2. **Xian, X.**, Mahoutian, M., Zhang, S., Shao, Y., Zhang, D., Liu, J., 2023. Converting industrial waste into a value-added cement material through ambient pressure carbonation. **J. Environ. Manage.** 325(B), 116603. <https://doi.org/10.1016/j.jenvman.2022.116603>

Contributions of the Research: Ambient pressure carbonation curing can be used to convert steel slag into value-added building material and those products so produced can reduce carbon emissions, energy usage, and natural resource consumption. **Life-cycle assessment** is also performed to confirm the feasible application of ambient pressure carbonation.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

3. **Xian, X.**, Zhang, D., Lin, H., Shao, Y., 2022. Ambient pressure carbonation curing of reinforced concrete for CO₂ utilization and corrosion resistance. **J. CO₂ Uti.** 56, 101861. <https://doi.org/10.1016/j.jcou.2021.101861>

Contributions of the Research: It is proven that ambient pressure carbonation can be applied to cure OPC-based reinforced concrete, improve concrete resistance to chloride-induced corrosion and sequester carbon dioxide.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

4. **Xian, X.**, Logan, C., Shao, Y., 2022. Dimensional stability of cement paste and concrete subject to early-age carbonation curing. **Mater. Struct.** 55, 94. <https://doi.org/10.1617/s11527-022-01926-8>

Contributions of the Research: Early-age carbonation curing can improve the dimensional stability of cement-based products in long-term service.

CRedit authorship contribution statement: Formal analysis; Writing - original draft.

5. **Xian, X.**, Zhang, D., Shao, Y., Zhang, S., 2022. Evaluation of corrosion resistance of precast reinforced concrete subjected to early-age ambient pressure carbonation curing by accelerated impressed current method. *J. Sustain. Cem.-Based Mater.* 1-17.
<https://doi.org/10.1080/21650373.2022.2098200>

Contributions of the Research: The accelerated impressed current is applied to confirm that ambient pressure carbonation-cured concrete is corrosion resistant while still having the capacity to reduce CO₂ emissions.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

6. **Xian, X.**, Zhang, D., Shao, Y., 2021. Flue gas carbonation curing of cement paste and concrete at ambient pressure. *J. Clean. Prod.* 313, 127943.
<https://doi.org/10.1016/j.jclepro.2021.127943>

Contributions of the Research: It is proven that ambient pressure flue gas carbonation of OPC-based products is feasible and applicable. **Cost analysis** is also conducted to prove the advantage of ambient pressure over high pressure in terms of carbonation curing.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

7. **Xian, X.**, Shao, Y., 2021. Microstructure of cement paste subject to ambient pressure carbonation curing. *Constr. Build. Mater.* 296, 123652.
<https://doi.org/10.1016/j.conbuildmat.2021.123652>

Contributions of the Research: Ambient pressure is proven to be as effective as high pressure in terms of early-age carbonation curing.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

8. **Xian, X.**, Shao, Y., 2021. Carbonation curing of concretes in a flexible enclosure under ambient pressure. *J. Mater. Civ. Eng.* 33(4), 04021025.
[https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0003648](https://doi.org/10.1061/(ASCE)MT.1943-5533.0003648)

Contributions of the Research: A new carbonation curing system at ambient pressure is successfully developed using a flexible enclosure made from a plastic sheet with a pressure-resistant zipper that can accommodate any shape and size of precast concrete products.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

9. **Xian, X.**, Long, W., Chen, B., Huang, M., Fan, Y., 2013. High-Strength Self-compacting Concrete and its Application in Shenzhen Mangrove Garden. Applied Mechanics and Materials 438, 338-341. <https://doi.org/10.4028/www.scientific.net/AMM.438-439.338>

Contributions of the Research: High strength self-compacting concrete is successfully developed and applied in a real-life project.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

10. Wang, Y., **Xian, X.**, Xing, F., Dong, B., 2013. The Study on Preparation of Kaolin-Acrylic Super Absorbent Polymer and its Internal Curing Effect in the Hydration Procedure of Cement Materials. Advanced Materials Research 622, 276-279. <https://doi.org/10.4028/www.scientific.net/AMR.622-623.276>

Contributions of the Research: Kaolin-acrylic super absorbent polymer is successfully applied to increase concrete strength through internal curing.

CRedit authorship contribution statement: Methodology; Investigation; Formal analysis.

11. **Xian, X.**, Wang, Y., Xing, F., Dong, B., 2012. Measuring and modeling analysis of electrochemical impedance spectroscopy for hydration procedure of cement materials. Advanced Materials Research 588, 1033-1036. <https://doi.org/10.4028/www.scientific.net/AMR.588-589.1033>

Contributions of the Research: A new equivalent circuit model is developed to express the hydration procedure of cement material in electrochemical impedance spectroscopy.

CRedit authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis; Writing - original draft.

PATENT APPLICATIONS

1. Title: Carbonation Curing of Concrete Elements and Products in a Flexible Enclosure
Application No.: **US patent 63/197,660, 2021.**
Inventor: Shao, Y., **Xian, X.**, Mahoutian, M.
Contributions: Develop a new carbonation curing enclosure for ambient pressure.
Authorship contribution statement: Conceptualization; Methodology; Investigation; Formal analysis.
2. Title: One kind of Mold for Testing Steel Corrosion of Cement Specimens (In Chinese)
Application No.: 2013204062741
Inventor: Dong, B., Wang, Y., Xing, F., **Xian, X.**, Chen, L., Yuan, W.
Contributions: Develop a new mould for testing steel corrosion of cement-based specimens.
Authorship contribution statement: Investigation; Formal analysis.
3. Title: Preparation and Application of One Kind Internal Curing Agent for Concrete (In Chinese).

Application No.: 201310417951.4

Inventor: Xing, F., Dong, B., Wang, Y., **Xian, X.**

Contributions: Develop a new material for the internal curing of concrete.

Authorship contribution statement: Investigation; Formal analysis.

4. Title: Preparation of One Kind Chemical-healing Concrete with the Function of Chemical Trigger (In Chinese).

Application No.: 20131041945.9

Inventor: Xing, F., Dong, B., Wang, Y., **Xian, X.**

Contributions: Develop a new chemical material for the self-healing of concrete.

Authorship contribution statement: Investigation; Formal analysis.

5. Title: A Testing Method of Release Amount of Capsule Content for Chemical-healing Microcapsule in Concrete (In Chinese).

Application No.: 201310400416.8

Inventor: Xing, F., Dong, B., Wang, Y., **Xian, X.**

Contributions: Develop a new testing method for releasing chemicals from capsules to heal concrete.

Authorship contribution statement: Investigation; Formal analysis.

GOOGLE SCHOLAR

[Xiangping Xian - Google Scholar](#)

JOURNAL REVIEWS

1. Journal of Materials in Civil Engineering (ASCE)
2. Journal of Building Engineering
3. Canadian Journal of Civil Engineering

OTHER HONOURS & AWARDS

Competitions

5/2012 **Won** champion of Design and Analysis of Structure in the 3rd National Software Modeling Contest, sponsored by SiWeiEr Company (BIM)

05/2012 **Won** the 2nd prize in the 2nd National Concrete Material Design Contest in Nanjing.

Academic Study

11/2012 **Yang Shuzi Scholarship** (only ten awardees throughout the whole University per year)
By Shenzhen University

11/2012 **Hao Rizi Scholarship** (only two awardees per grade)
By Shenzhen University
In the College of Civil Engineering, Shenzhen University

Volunteer Work

10/2011 **Outstanding Volunteer of Shenzhen University**
By Shenzhen University

Sports

12/2010 **Taekwondo Champion in Comprehensive Sports meeting**
By the Department of Physical Education of Shenzhen University