Dr Nicolas Hadjipantelis

PhD DIC MEng A.M.ASCE

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As Assistant Professor of Structural Engineering at the University of Cyprus, I conduct research in the area of steel structures and teach courses on structural steel design and structural stability at undergraduate and postgraduate level.

I am the founder and leader of the Steel Structures Laboratory of the Department of Civil & Environmental Engineering of the University of Cyprus. My vision is to develop a prominent Steel Structures Group comprising high-calibre researchers that will be producing research excellence for the benefit of the environment and the wider society.

My research philosophy is based on three pillars, namely innovation, quality and impact. My principal research interests lie in the areas of large-scale robotic metal 3D printing (specifically, wire arc additive manufacturing (WAAM)), prestressed steel structures, cold-formed steel structures and structural stability. My research activities include the production of WAAM structures, structural testing, numerical modelling and the development of design guidelines.

I hold a PhD in Steel Structures from Imperial College London and a First Class MEng degree from the University of Bristol, as part of which I studied and conducted research for one year at the University of California, Berkeley.

PART 1: BACKGROUND

EMPLOYMENT

Assistant Professor – *University of Cyprus* 2025–
Lecturer – *University of Cyprus* 2020–2024

- Founder and Director of the Steel Structures Laboratory
- Established the first WAAM facility in Cyprus and produced more than 1 tonne of specimens for structural testing
- Research on WAAM, prestressed steel structures, cold-formed steel and structural stability
- Teaching courses on structural steel design, structural stability and strength of materials (laboratory)

Research Associate – *Imperial College London & The Alan Turing Institute* 2019–2020

- Participated in the full-scale verification tests on the MX3D bridge, the world's first metal 3D printed bridge
- Collaborations: *University of Cambridge*, *MX3D*, *Ayrshire Metals*

EDUCATION

PhD in Steel Structures 2015–2019

Imperial College London

- Thesis title: Prestressed cold-formed steel beams (Supervisors: Prof. Leroy Gardner & Prof. M. Ahmer Wadee)
- Awarded the prestigious President's PhD Scholarship (3.5 years)

MEng in Civil Engineering with Study Abroad

University of Bristol 2011–2015

- First Class Honours – 76% – Cohort ranking: 3/76
- Final year design project: The Ocean Skyscraper (highest mark)

University of California, Berkeley 2013–2014

- Overall GPA: 3.91/4.0 – 6 Grade A (5 in Structures) & 1 Grade B+

SCHOLARSHIPS, HONOURS & AWARDS

1. **Nomination for Quality Teaching Award** 2026
   University of Cyprus – Awarded bi-annually to academic staff (Faculty-wide) who demonstrate outstanding teaching performance, pedagogical innovation and strong student engagement.
2. **President's PhD Scholarship** 2015–2019
   Imperial College London – Awarded to 50 researchers based on academic excellence (3.5 years)
3. **IStructE 20th Young Researchers' Conference** 2018
   Institution of Structural Engineers – 3rd prize for oral presentation (video)
4. **ICE Student Prize** 2015
   Institution of Civil Engineers – Best performance in Years 3–4
5. **Top 3 students in cohort over entire course** 2015
   University of Bristol – Cohort ranking: 3/76
6. **Highest mark in final year design project** 2015
   University of Bristol – Project title: The Ocean Skyscraper
7. **Top 10 students of Faculty of Engineering** 2014
   University of Bristol – Based on performance in Year 3

TECHNICAL STRENGTHS

Key areas: Large-scale metal 3D printing || Cold-formed steel || Hot-rolled steel || Prestressed steel structures

Experimentation:	Material, member & full-scale testing || Digital image correlation || 3D laser scanning
Metal 3D printing:	Production, testing and modelling of WAAM structures
Numerical modelling:	Geometrically & materially nonlinear finite element analysis with imperfections ABAQUS || CUFSM || cFSM
Analytical modelling:	Classical structural mechanics || Energy methods || Nonlinear stability
Structural design:	European standards || North American standards || Reliability analysis
Programming:	Matlab || Python || LaTeX
Parametric & CAD:	Rhino || Grasshopper || Revit || AutoCAD || Inkscape

PART 2: RESEARCH ACTIVITIES

RESEARCH GRANTS

Total: *€237,516*

1. **PhD in Industry** 2025–2028
   Research and Innovation Foundation, Cyprus – PHD IN INDUSTRY/1124/0003 *€45,360*
   Title: Steel 3D printing to the rescue of heritage masonry structures (S3DPRHMAS)
   Roles: Co-Investigator; Co-Supervisor
2. **Proof of Concept for Technology / Knowhow Applications** 2024–2025
   Research and Innovation Foundation, Cyprus – CONCEPT/0823/0164 *€40,000*
   Title: Wire arc additively manufactured steel-concrete composite columns: Conceptual development (WAAMCO)
   Role: Principal Investigator; Supervisor Project implementation rating by funding body: Excellent
3. **Internal Funding Scheme** 2023–2025
   University of Cyprus *€60,000*
   Title: Strengthening of unreinforced heritage masonry structures
   Roles: Co-Investigator; Co-Supervisor

4. **Proof of Concept for Technology / Knowhow Applications** 2023–2024
   Research and Innovation Foundation, Cyprus – CONCEPT/0722/0033 *€40,000*
   Title: Strengthening of unreinforced heritage masonry structures (SHMAS)
   Roles: Co-Investigator; Co-Supervisor

5. **Start-up Grant** 2021–2023
   University of Cyprus *€50,000*
   Title: Wire and arc additive manufacturing facility at the University of Cyprus
   Role: Principal Investigator

6. **Dame Julia Higgins Postdoc Collaborative Research Fund** 2019
   Imperial College London, Faculty of Engineering *€2,156*
   Title: Metal 3D printed structures – Evaluating the effect of residual stresses
   Role: Principal Investigator

REFEREED JOURNAL PUBLICATIONS

1. Hong W., Zhang R.*, **Hadjipantelis N.** & Gardner L. (2026). Buckling behaviour and design of DED-Arc high strength steel circular hollow sections. *Thin-Walled Structures*, 219, 114297.

2. Mavros M.*, **Hadjipantelis N.**, Ioannou I., Kontovourkis O. & Georgiou A.A. (2025). In-plane strengthening of heritage masonry structures using 3D-printed steel reinforcement: Experimental proof-of-concept. *Construction and Building Materials*, 499, 143746.

3. **Hadjipantelis N.*** (2025). Wire arc additive manufacturing of steel structures: Guidelines and predictive equations. *Structures*, 81, 110237.

4. Xing Z., Wu K., Huang C.*, **Hadjipantelis N.** & Gardner L. (2025). Elevated temperature mechanical testing of wire arc additively manufactured austenitic stainless steel. *Construction and Building Materials*, 494, 143316.

5. Huang C., Liang Z.*, Li G.-Q., Zhao X.-L., **Hadjipantelis N.** & Gardner L. (2025). Ductile fracture of WAAM steel: Experiments, simulations and model calibration. *International Journal of Mechanical Sciences*, 304, 110684.

6. Panagiotopoulos V.*, **Hadjipantelis N.** & Gantes J.C. (2025). Influence of process parameters on weld quality and nominal geometry of wire arc additively manufactured steel elements. *Structures*, 80, 110044.

7. Huang C.*, **Hadjipantelis N.**, Quan S., Chen T., & Gardner L. (2024). Mechanical properties of wire arc additively manufactured steels at polar temperatures. *Structures*, 70, 107627.

8. Evans S.I., **Hadjipantelis N.** & Wang J.* (2024). Stub column tests on wire arc additively manufactured equal-leg angle sections. *Engineering Structures*, 164, 105790.

9. Shah I.H.†, **Hadjipantelis N.**†, Walter L., Myers R.J.* & Gardner L.* (2023). Environmental life cycle assessment of wire arc additively manufactured steel structural components. *Journal of Cleaner Production*, 389, 136071.

10. **Hadjipantelis N.***, Weber B., Buchanan C. & Gardner L. (2022). Description of anisotropic material response of wire and arc additively manufactured thin-walled stainless steel elements. *Thin-Walled Structures*, 171, 108634

11. Kyvelou P.*, Nethercot D.A., **Hadjipantelis** N., Kyprianou C. & Gardner L. (2020). The evolving basis for the design of light gauge steel systems. *International Journal of Structural Stability and Dynamics*, 20(13), 2041008.

12. Wadee M.A., **Hadjipantelis N.***, Bazzano J.B., Gardner L. & Lozano-Galant J.A. (2019). Stabilization of steel truss compression elements by means of prestressed cables. *Journal of Constructional Steel Research*, 164, 105790.

13. **Hadjipantelis N.***, Gardner L. & Wadee M.A. (2019). Finite-element modeling of prestressed cold-formed steel beams. *Journal of Structural Engineering, ASCE*, 145(10), 04019100.

14. **Hadjipantelis N.***, Gardner L. & Wadee M.A. (2019). Design of prestressed cold-formed steel beams. *Thin-Walled Structures*, 140, 565–78.

15. **Hadjipantelis N.**, Gardner L.* & Wadee M.A. (2018). Prestressed cold-formed steel beams: Concept and mechanical behaviour. *Engineering Structures*, 172, 1057–72.

† Co-first authors
* Corresponding author(s)

REFEREED CONFERENCE PUBLICATIONS

1. **Hadjipantelis N.*** (2025). Predictive equations for wire arc additive manufacturing of thin-walled steel elements. *12th International Conference on Advances in Steel Structures (ICASS 2025) & 4th International Symposium on Industrialized Construction Technology (ISICT 2025)*, Singapore, 9-12 December, 2025.

2. Hong W.*, **Hadjipantelis N.**, Zhang R. & Gardner L. (2025) Buckling tests on wire arc additively manufactured high strength steel CHS columns. *12th International Conference on Advances in Steel Structures (ICASS 2025) & 4th International Symposium on Industrialized Construction Technology (ISICT 2025)*, Singapore, 9-12 December, 2025.

3. Wang J.*, **Hadjipantelis N.** & Evans S.I. (2025). Effects of deposition rate on mechanical properties of wire arc additively manufactured stainless steel elements. *12th International Conference on Advances in Steel Structures (ICASS 2025) & 4th International Symposium on Industrialized Construction Technology (ISICT 2025)*, Singapore, 9-12 December, 2025.

4. Georgiou A.A., **Hadjipantelis N.**, Ioannou I., Kontovourkis O. & Mavros M.* (2025). Finite element modeling of heritage unreinforced masonry walls retrofitted using 3D-printed steel reinforcement. *14th International Conference on Structural Analysis of Historical Constructions (SAHC)*, Lausanne, Switzerland, 15-17 September, 2025.

5. **Hadjipantelis N.*** (2025). Practical guidelines for wire arc additive manufacturing of steel components. *International Colloquium on Stability and Ductility of Steel Structures (SDSS)*, Barcelona, Spain, 8-10 September, 2025.

6. Hong W.*, Zhang R., **Hadjipantelis N.** & Gardner L. (2025). Local buckling behaviour of wire arc additively manufactured high strength steel circular hollow sections. *International Colloquium on Stability and Ductility of Steel Structures (SDSS)*, Barcelona, Spain, 8-10 September, 2025.

7. Hong W., Evans S.I., Cashell K.A., Gardner L. & **Hadjipantelis N.*** (2025). Stub column tests on concrete-filled wire arc additively manufactured steel tubes. *International Colloquium on Stability and Ductility of Steel Structures (SDSS)*, Barcelona, Spain, 8-10 September, 2025.

8. Panagiotopoulos V.*, **Hadjipantelis N.**, Gantes J.C. & Lagaros N. (2025). Effects of process parameters on characteristics of wire arc additively manufactured steel elements. *ADDitively Manufactured OPTimized Structures by means of Machine Learning (ADDOPTML)*, Amman, Jordan, 1-3 October, 2024.

9. Huang C.*, **Hadjipantelis N.** & Gardner L. (2024). Mechanical properties of WAAM steels at polar temperatures. *10th International Conference on Steel and Aluminium Structures*, Rio de Janeiro, Brazil, June 5–7, 2024.

10. Mavros M.*, **Hadjipantelis N.**, Ioannou I. & Kontovourkis O. (2024). 3D printed steel reinforcement for strengthening historic unreinforced masonry structures. *18th World Conference on Earthquake Engineering*, Milan, Italy, June 30–July 5, 2024.

11. Panagiotopoulos V.*, **Hadjipantelis N.** & Gantes J.C. (2023). Evaluation of effects of printing parameters on geometric and mechanical properties of wire arc additively manufactured elements. *10th Hellenic National Conference of Steel Structures*, Athens, Greece, October 19–21, 2023; (in Greek).

12. **Hadjipantelis N.**†,*, Shah I.H.†, Walter L., Myers R.J. & Gardner L. (2023). Metal additively versus conventionally manufactured structures – An environmental life cycle assessment. *10th European Conference on Steel and Composite Structures, Eurosteel*, Amsterdam, Netherlands, September 12–14, 2023. (link)

13. Evans S.I.*, **Hadjipantelis N.** & Wang J. (2023). Effects of deposition rate on local stability of wire arc additively manufactured outstand elements. *10th European Conference on Steel and Composite Structures, Eurosteel*, Amsterdam, Netherlands, September 12–14, 2023. (link)

14. **Hadjipantelis N.***, Weber B. & Gardner L. (2021). Characterisation of the anisotropic response of wire and arc additively manufactured stainless steel. *9th European Conference on Steel and Composite Structures, Eurosteel*, Sheffield, UK, September 1–3, 2021. (link)

15. **Hadjipantelis N.***, Kyvelou P., Gardner L. & Wadee M.A. (2019). Numerical modelling of prestressed composite cold-formed steel flooring systems. *7th International Conference on Structural Engineering, Mechanics and Computation*, Cape Town, South Africa, September 2–4, 2019. (link)

16. **Hadjipantelis N.***, Gardner L. & Wadee M.A. (2018). Prestressed cold-formed steel beams – Parametric studies and design recommendations. *9th International Conference on Advances in Steel Structures*, Hong Kong, China, December 5–7, 2018.

17. **Hadjipantelis N.***, Gardner L. & Wadee M.A. (2018). Prestressed cold-formed steel beams – Conceptual development. *8th International Conference on Thin-Walled Structures*, Lisbon, Portugal, July 24–27, 2018.

18. **Hadjipantelis N.**[*,◇] (2018). Prestressed cold-formed steel beams. *20th Young Researchers' Conference of the Institution of Structural Engineers*, London, United Kingdom, April 10, 2018.

† Co-first authors
* Oral presentations
◇ 3rd prize for oral presentation

OTHER PUBLICATIONS

1. Panagiotopoulos V., **Hadjipantelis N.**, Gantes J.C. (2025). Nominal geometry and weld quality of WAAM thin-walled elements *Newsletter of National Technical University of Athens*. Issue July 2025.

2. **Hadjipantelis N.** (2021). Metal 3D printing in the construction sector: prospects and challenges. *The Civil Engineer*. Issue July 2021. Cyprus Association of Civil Engineers; (in Greek).

3. **Hadjipantelis N.** (2019). Prestressed cold-formed steel beams. *PhD Thesis*. Imperial College London.

TECHNICAL REPORTS

1. Buchanan C., **Hadjipantelis N.**, Kyvelou, P. & Gardner, L. (2020). Summary of the September 2019 MX3D Bridge test programme. *Amsterdam Municipality*.

2. **Hadjipantelis N.**, Dong, Q. & Gardner, L. (2019). Digital Twins. *British Constructional Steelwork Association, New Steel Construction magazine*.

PART 3: TEACHING & SUPERVISION

TEACHING

Lectures – *University of Cyprus* 2020–

- MSc – CEE541: Structural Stability ‖ created the course
- Year 4 – CEE441: Design of Steel Structures II ‖ restructured and redeveloped the course
- Year 3 – CEE342: Design of Steel Structures I ‖ restructured and redeveloped the course
- Year 2 – CEE:232: Strength of Materials (laboratory) ‖ renewed the course material

Lectures – *Imperial College London* 2019

- MSc – Structural Stability (2 sessions)

- MSc – Plated Steel Structures (1 session)

Graduate Teaching Assistant – *Imperial College London* 2015–2019

- Tutorials – 190 hours in total – Structural Stability (MSc, Yr3), Steel Design (Yr2), Structural Mechanics (Yr2, Yr1)

RESEARCH SUPERVISION

Current PhD students

#	Name (Start year)	Project title	Co-supervisor
1	Andreas Georgiou (2024)	Strengthening of unreinforced heritage masonry structures with 3D printed steel reinforcement	Dr M. Mavros *University of Cyprus*
2	Vasilis Panagiotopoulos (2022)	Effect of heat input on the material properties of WAAM steel elements	Prof. C. J. Gantes *Nat. Tech. Uni. of Athens*
3	Wenxuan Hong (2022)	Structural behaviour of optimised WAAM columns	Prof. L. Gardner *Imperial College London*

Current Master's students

#	Name (Start year)	Project title	Co-supervisor
1	Neofyta Themistokleous MEng (2024)	Strengthening of structural members using WAAM	–

Completed Master's students

#	Name (End year)	Project title	Co-supervisor
1	Anna Kaiki MSc (2024)	Numerical modelling of prestressed cold-formed steel beams with flange opening	–
2	Anastasia Khattab MSc (2024)	Topology optimisation of WAAM flexural members	Dr O. Kontovourkis *University of Cyprus*
3	Antreas Paraskeva MSc (2024)	Optimisation of WAAM cross-sections subjected to compression	Dr D. Charmpis *University of Cyprus*
4	Antreas Roous MEng (2021)	Parameter calibration of a WAAM system	–
5	Zihan Zhang MSc (2021)	Finite element simulations of WAAM square hollow sections	Prof. L. Gardner *Imperial College London*
6	Cheng Peng MEng (2021)	An exploration of new technologies in steel construction	Prof. L. Gardner *Imperial College London*
7	Yiying Yang MEng (2021)	Economics of metal 3D printing in the construction industry	Prof. L. Gardner *Imperial College London*
8	Hok Io Kuan MSc (2020)	Optimisation of the cross-sectional shape of prestressed cold-formed steel beams	Prof. M.A. Wadee *Imperial College London*
9	Lulu Walter MEng (2020)	A Life Cycle Assessment comparing WAAM to conventionally manufactured structural steel	Prof. L. Gardner *Imperial College London*
10	Inès Chessa MSc (2020)	Finite element modelling of WAAM stub columns	Prof. L. Gardner *Imperial College London*
11	Ben Weber MSc (2020)	Material anisotropy in WAAM structures	Prof. L. Gardner *Imperial College London*

12	Stelios Kleanthous MSc (2019)	Finite element modelling of 3D printed steel tensile coupons	Prof. L. Gardner *Imperial College London*
13	Hao Tu MSc (2019)	Optimization of prestressed cold-formed steel beam systems	Prof. M.A. Wadee *Imperial College London*
14	Quihong Dong MEng (2019)	An exploration of new technologies in steel construction	Prof. L. Gardner *Imperial College London*
15	Spyridon Kalyvas MSc (2018)	Structural behaviour of warped plates under pure shear	Prof. L. Gardner *Imperial College London*
16	Sin Ming Wong MEng (2017)	Post-buckling strength of thin-walled square hollow section struts	Prof. L. Gardner *Imperial College London*
17	Luke Houghton MEng (2017)	Interactive buckling in thin-walled lipped channel sections	Prof. M.A. Wadee *Imperial College London*

Awards won by students under my supervision

#	Name	Award	Co-supervisor
1	Ben Weber	2021 Dutch Open Student Steel Award – 2nd prize	Prof. L. Gardner (*Imperial College London*)

PART 4: PROFESSIONAL ROLES

ROLES AT UNIVERSITY OF CYPRUS

Senate Committees

- Member of International Relations Committee (Faculty Representative) 2025–

Faculty Committees

- Publications Committee 2024–
- Member of International Relations & Promotion Committee 2022–
- Member of Faculty Council 2021–2022

Departmental Committees

- Chair of International Relations & Promotion Committee 2022–
- Coordinator and administrator of departmental website and social media accounts 2021–
- Member of International Relations & Promotion Committee 2020–2022
- Member of Strategy Committee (Research Group) 2021

Internal PhD Examiner

- Papargyri L. Numerical modelling of material and structural integrity of crystalline silicon photovoltaics. 2024
- Triantafyllaki A. Structural integrity of offshore pipelines crossing active faults. 2022

EXTERNAL PHD REVIEWER

- Arrè L. 3D printing in construction: WAAM for steel structural engineering applications. 2026

MEMBERSHIPS TO PROFESSIONAL BODIES

- CEN/TC 250/SC 3 Ad-Hoc Group on 'Design of steel structures featuring WAAM' 2025–
- Greek Steel Structures Research Society ‖ Full 2022–
- Cyprus Scientific and Technical Chamber (ETEK) ‖ Full 2019–
- Cyprus Association of Civil Engineers (CYACE) ‖ Full 2017–

- American Society of Civil Engineers (ASCE) ‖ Associate 2017–
- Institution of Structural Engineers (IStructE) ‖ Graduate 2011–

REVIEWER FOR INTERNATIONAL JOURNALS

1. Journal of Structural Engineering (ASCE)
2. Engineering Structures (Elsevier)
3. Thin-Walled Structures (Elsevier)
4. Journal of Constructional Steel Research (Elsevier)
5. Engineering Fracture Mechanics (Elsevier)
6. Structures, IStructE (Elsevier)
7. Resources, Conservation & Recycling (Elsevier)
8. Structures and Buildings (Institution of Civil Engineers)
9. International Journal of Steel Structures (Springer)
10. Journal of the International Association for Shell and Spatial Structures (IASS)

INTERNATIONAL CONFERENCE SCIENTIFIC COMMITTEES

1. Hellenic National Conference of Steel Structures 2023, 2026
2. International Colloquium on Stability and Ductility of Steel Structures (SDSS) 2025

INVITED TALKS AND SEMINARS

#	Presentation title	Organiser	Year
1	Metal 3D printed structures: Fundamentals and recent research findings	Department of Engineering *City, University of London*	2024
2	Metal 3D printed structures: The first 3D printed footbridge (video, in Greek)	Greek Steel Structures Research Society *National Technical University of Athens*	2022
3	Civil and Structural Engineering: A researcher's perspective	The G C School of Careers, Nicosia	2021
4	Metal 3D printing in the construction industry: State-of-the-art and perspectives	Dep. of Civil and Environmental Engineering *University of Cyprus*	2021

KEY OUTREACH ACTIVITIES

#	Title	Description	Year
1	3D Printed Pasts	Permanent WAAM installation in central Nicosia, Cyprus. Produced for the 'Pame Kaimakli 2024' Festival (20–22/09/2024). The installation is the first large-scale WAAM structure that has been produced in Cyprus.	2024