

## Narrative Curriculum Vitae – Engineering Science

### Barbara

#### A. Research

*Review of research to date (composition of research group, engagement in/establishment of research collaborations)*

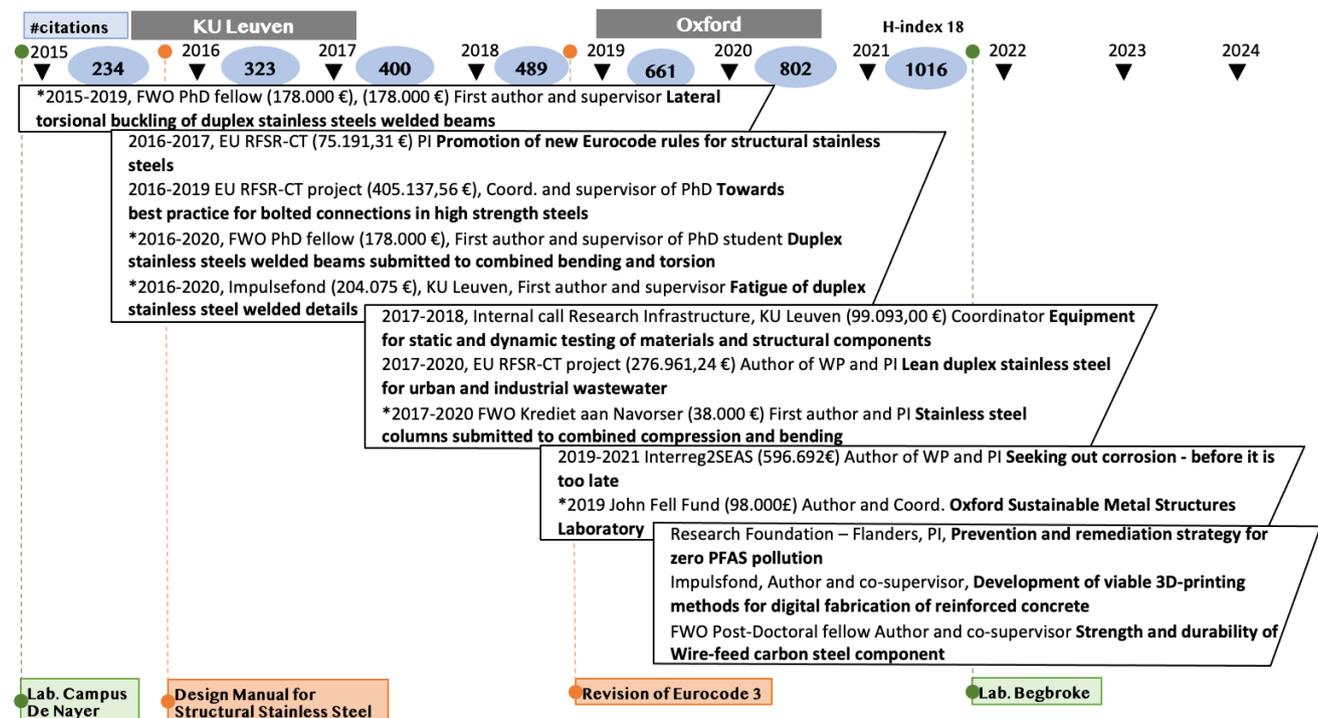


Figure 1. Research grants held (\*main coordinator and therefore PI)

#### 1. Introduction

2009-2013: As a post-doctoral researcher, I was PI in 1 national interuniversity project and 1 European RFSR project, on top of a second personal research grant from the National Fund for Scientific Research, worth €365k and worked principally on the strength of hot cross-sections and cold-formed profiles in view of a more rational exploitation of their material strengths in structures.

2013-2019: In 2013, I was appointed Assistant Professor at KU Leuven, and started to lead a research group in the areas of structural testing, numerical modelling, and the development of design guidance for metallic structures. There, I was PI of (national- and international-) research projects (valued at €1,380k) on the stability and fatigue behaviour of stainless steel structures submitted to combined loadings. For the latter, in 2014, I secured €368k to acquire, install and maintain new equipment for my laboratory at KU Leuven. In 2018, I was leading a research group composed of 8 doctorate students and 1 post-doctorate researcher. Today I still lead this group, with however a decreased size, which conducts (experimental) research in the mentioned laboratory alongside my activities in Oxford.

2019-today: In 2019, I was appointed Assistant Professor at The University of Oxford. My core research activities include the study of hybrid (e.g., carbon steel welded to stainless steel) structures in harsh environments (e.g., open ocean applications, wastewater, nuclear environments) where phenomena such as fatigue and corrosion play an important role. The work that I carry out is based on (full-) scale experiments on materials and structures subjected to varying (dynamic-) loading conditions, to investigate and verify their structural performance. Usually, it involves numerical parametric studies following experimental campaigns to establish trends to assess the accuracy of current design guidance's, give directions of improvement or, more often, develop completely new ones. In addition to test results and design methodologies, we also develop new structural components and manufacturing processes. The results that my team generates are usually directly usable by industrial players to manufacture more resilient, leaner and stronger, as well as more

durable structural components. For example, the work of my team played a key role in the latest revision of Eurocode 3 Parts 1-1 and 1-4 (for carbon and stainless steel structures) and, recently (in 2021), in Part 1-9 on the fatigue of hot-dip galvanized welded joints. In relation, I am co-author of the Design Manual for Structural Stainless Steel in English and French. These books are published and used directly by companies to design structures more efficiently saving impacts at source. Amongst other topics, my group studies metallic components obtained through wire-arc additive manufacturing, in view of establishing their mechanical behaviour, especially when submitted to repetitive loading. Over the last 10 years, I also branched into the area of life-cycle analysis and sustainability applied to steel construction. I am a sustainability expert within the construction sector with emphasis on embodied carbon in construction and infrastructure and Net Zero strategy. Figure 1 schematically summarizes the funding's that supported my research these last 5 years.

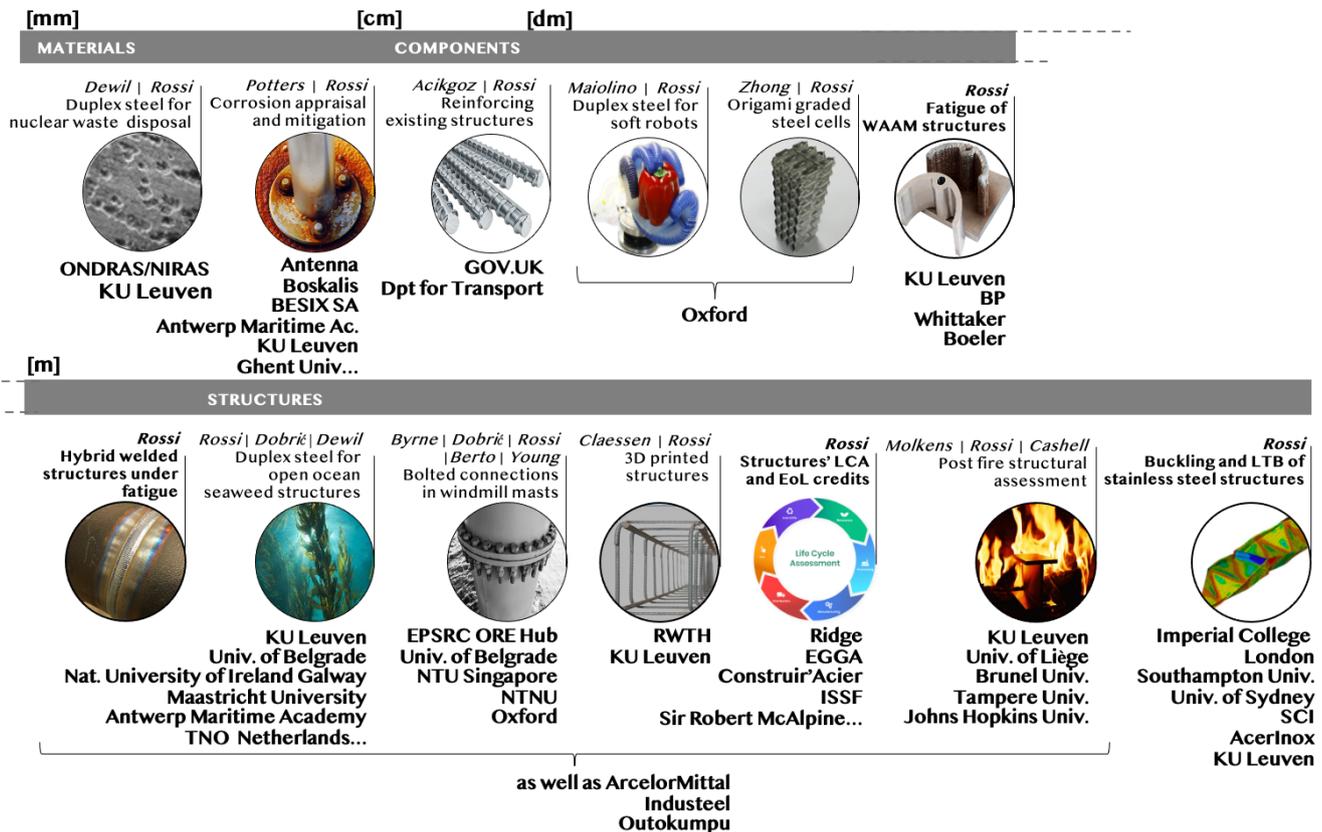


Figure 2. Topics and partners

## 2. Research group, project management, collaborations within academia:

I am presently (co-)supervisor of 9 postgraduate students (and 5 have completed and successfully defended their thesis): 3 at the University of Oxford and 6 elsewhere (KU Leuven and Czech Technical University in Prague). With my support, 2 of them acquired the quite prestigious Fonds Wetenschappelijk Onderzoek – Vlaanderen (FWO) grant. I am also supervisor of 3 post-doctoral researchers, 2 of which also obtained the FWO post-doctoral fellowship.

Figure 2 shows a schematic view of my core research topics and related topics I worked on and with whom I interacted and collaborated. All the cited academics have benefited from our collaboration through diverse ways such as share of expertise and access to cutting edge equipment. My main and enduring academic collaborations were initiated during my doctorate and as a member of 3 Eurocode Evolutions Groups, with researchers from, e.g., Steel Construction Institute or Imperial College London. In these groups, we carry out and present our research, interact, and eventually integrate new design methods into the codes of practice. Through research projects, I collaborate widely with many different research teams and companies from all over the globe (names in *italics* represent researchers in Fig. 2). In the UK, I currently carry out research with Brunel University (*Cashell*), Southampton (*Afshan*), and Imperial College London (*Gardner*).

### 3. Engagement with industries and organisations:

Since 2013, I have developed very close collaborations with 3 major steel fabricators: ArcelorMittal (including Aperam), Outokumpu and AcerInox. They are involved and have invested in the research of 4 of my current graduate students. Industrial partners, such as those mentioned or Whittaker Engineering, Royal Boskalis Westminster, Besix SA, benefit directly from all (experimental and theoretical) outcomes of the research, which are directly usable, through the previously mentioned design manuals, revision of the codes and training, and (UK) companies profit as well from access to highly trained personnel. In addition, I am today working on a possible future research project on reducing the carbon footprints of existing building materials through dematerialisation.

Besides, I am collaborating with the European General Galvanizers Association and the eponym Turkish organization, on the life-cycle cost assessment of painted and galvanised bridges. And the association today supports one of my graduate students on the study of fatigue of galvanised steel plates of medium thickness.

With organisations such as Steel Construction Institute (UK), International Stainless Steel Forum, Infosteel (BE) and Construir'Acier (FR), I am disseminating the outputs of my research through training and webinars.

### 4. Interdisciplinary collaboration:

My ideas and the developed science have also found their way within interdisciplinary teamwork, generating new science based on cutting-edge ideas with others, thus contributing to generating new concepts and new scientific knowledge. Good examples are current collaborative projects that have sparked upon my ideas on soft robots (*Maiolino*), 3D printing of reinforced concrete (*Claessen*), origami metal structures (*Zhong*) and structures for nuclear waste disposal systems (*Dewil*), where I use my expertise on metal components submitted to cyclic loading and/or in corrosive environment. With my interactions with *Dewil* and *Byrne* I benefit from direct links through to offshore renewable energy, wastewater treatment and high added-value chemicals productions and applications where my expertise on high-strength steels and fatigue is topical.

*Details of research grants awarded and/or applications under consideration (dates, amounts and PI or a Co-PI)*

### Project via the University of Oxford and KU Leuven *since 2019*

#### *Awarded:*

- ◇ 1) Research Foundation – Flanders (FWO), PI, *Stainless steel welded beams under combined bending and torsion* Doctorate fellowship Lauwens, Kathleen
- ◇ 2) EU H2020 Research Fund for Coal and Steel (RFCS) *Lean duplex stainless steel for Urban and Industrial Wastewater*, PI, Amount KU Leuven: €276,961.24
- ◇ 3) Interreg 2Seas Mers Zeeën - *Seeking out corrosion - before it is too late*, PI, Total amount: €5,449,829.00 Amount KU Leuven: €373,248.81
- ◇ 4) Research Foundation – Flanders (FWO), with Whittaker Engineering, UK *Wire arc additive manufactured (WAAM) steel components for structural applications*, PI, Post-Doctorate fellowship Karabulut, Burak
- ◇ 5) Impulsfond – *Development of viable 3D-printing methods for digital fabrication of reinforced concrete*, PI, Doctorate fellowship Olena Shkundalova
- ◇ 6) John Fell fund *Oxford Sustainable Metal Structures Laboratory* PI Amount UOxford
- ◇ 7) EPSRC Vacation Internships *Large Haptic Devices*, Co-I with Perla Maiolino for Rory McKinnon
- ◇ 8) H2020 MSCA-ETN Training a new generation of researchers in offshore seaweed aquaculture for the production of high-value chemicals, PI

*Under consideration:*

- ◇ 9) EPSRC fellowship, PI, UOxford
- ◇ 10) Research Foundation – Flanders (FWO), SBO with international partners, *Prevention and remediation strategy for zero PFAS pollution (DePFASion)*, Co-I, UOxford

*Markers of recognition (invitations to deliver lectures, appointment to journal editorial boards, election to learned societies or research bodies)*

- I work as a consultant for companies regarding sustainability integration into business within the construction sector and was recently awarded **ICE Carbon Champion** by the Institution of Civil Engineers.
- I hold the following position/status, which enable me to contribute to research questions from the scientific/industrial community to edit/review scientific works from my peers, and to contribute to manuals comprising theories and case-studies:
  - (a) Member of 3 working groups of the CEN TC 250 SC3 on
    - (i) structural stainless steel,
    - (ii) fatigue and,
    - (iii) high-strength steel,
  - (b) Associate Editor of Journal of Environmental Management from 2018 to 2020,
  - (c) Recognized Reviewer for Journal of Constructional Steel Research; and Reviewer for Int. Journal of Advanced Steel Construction, Building and Environment, Thin-walled structures, Int. journal of fatigue, Environmental Impact Assessment, Applied Mathematical Modelling...
- By invitation (since 2019), I was:
  - A) Member of the International Advisory Board (IAB) and Int. Scientific Committee of the Eighth International Conference on Structural Engineering, Mechanics and Computation *SEMC 2022 (Cape Town)* Int. Conference
  - B) Member of the International Scientific Committee for Fatigue 2024, Cambridge
  - C) Keynote Speaker at:
    - 1- EGGA 2019 *Fatigue of hot dip galvanised bridges*
    - 2- Distinguished Foreign Lecture, 13 august 2020, for IEM *How bridges work?*
    - 3- Meeting Minds Global, 16 April 2021, *Can steel feel?*
    - 4- Construire'Acier, 16 June 2021, *Dimensionnement des structures portantes en acier inoxydable*
    - 5-Speaker at 4th International Stainless Steel Expert Seminar (by invitation only).

*List of publications and other outputs*

- H-index in Top 5%.
- 7<sup>th</sup> most cited author in *Journal of Constructional Steel Research* and 13<sup>th</sup> most cited author in *Engineering Structures*. 72 important journal papers published in international peer-reviewed journals that brings the author in the top 6% in the community with more than 1200 citations.

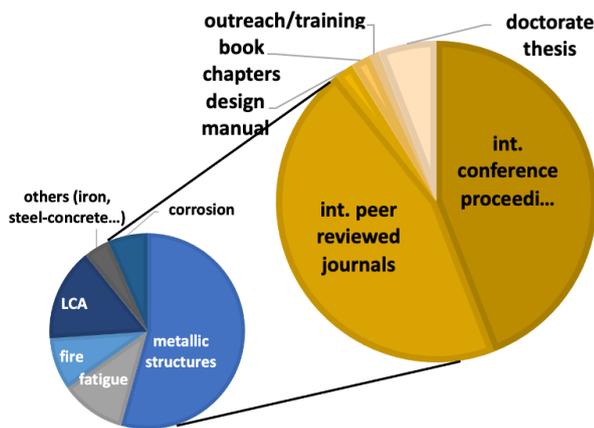


Figure 3. Schematic for dissemination of science

I have strong track records in translating scientific breakthroughs into high impact publications thus exchange my results with the academic world (cf. Fig. 3, **59 documents, top 4% among 4.9million authors**). All accepted manuscripts are deposited on the Oxford Research Archive and Open Access preprints are downloadable freely. Access by individuals and organizations with capability to build on the results developed the findings from which many companies and external users have benefited. I also communicated my research results in codes of practice, used daily by engineers and architects and through training, as mentioned above.

I currently co-hold, with Prof. P. Maiolino, a proposal for a patent for a haptic device enabling the transmission of the feeling of touch to patient having to self-isolate. We have had the chance to present our technology at the recent Meeting Minds-Global held by University of Oxford China Office Limited and have raised industrial awareness by building an online marketing profile intended to prospective companies.

I have also developed a webpage and videos for the University of Oxford Human library as well as a podast from Oxford Sparks:

<https://eng.ox.ac.uk/human-library/book-directory/barbara-rossi/>

<https://www.oxfordsparks.ox.ac.uk/podcasts/what-is-green-steel/>

### List of Publications *since 2019*

Complete list available at the bottom of this résumé or here <https://eng.ox.ac.uk/people/barbara-rossi/>

#### i) Reports of original research, peer reviewed to an international standard

1. Nagels, M., Verhoeven, B., Larche, N., Dewil, R., Rossi, B. with Rossi, B. (2022). Comparative life cycle cost assessment of (lean) duplex stainless steel in wastewater treatment environments. *Journal of Environmental Management*, 306, Art.No. ARTN 114375. doi: [10.1016/j.jenvman.2021.114375](https://doi.org/10.1016/j.jenvman.2021.114375) (Impact factor: 6.79) [Open Access](#)
2. Dobric, J., Cai, Y., Young, B., Rossi, B. (2021). Behaviour of duplex stainless steel bolted connections. *Thin-walled Structures*, 169, Art.No. ARTN 108380. doi: [10.1016/j.tws.2021.108380](https://doi.org/10.1016/j.tws.2021.108380) (Impact factor: 4.44)
3. Karabulut, B., Rossi, B. (2021). On the fatigue behavior of duplex and high strength welded cruciform joints. *Engineering Structures*, 247, Art.No. 113161. doi: [10.1016/j.engstruct.2021.113161](https://doi.org/10.1016/j.engstruct.2021.113161) (Impact factor: 4.47)
4. Molkens, T., Rossi, B. (2021). Linear elastic mode-based reliability approach for single-bay portal frames. *Structures*, 34, 2205-2217. doi: [10.1016/j.istruc.2021.08.113](https://doi.org/10.1016/j.istruc.2021.08.113) (Impact factor: 2.98)

5. Molkens, T., Rossi, B. (2021). Reliability-based structural response of singlebay steel frames in case of fire and in post-fire conditions. *Structural Safety*, Art.No. 102132. (Impact factor: 5.05)
6. Karabulut, B., Rossi, B. (2021). On the applicability of the hot spot stress method to high strength duplex and carbon steel welded details. *Engineering Failure Analysis*, 128, Art.No. 105629. doi: [10.1016/j.engfailanal.2021.105629](https://doi.org/10.1016/j.engfailanal.2021.105629) (Impact factor: 3.11)
7. Nagels, M., Poelmans, S., Dries, J., Lambert, N., Van Aken, P., Appels, L., Rossi, B., Cabooter, D., Dewil, R. (2021). Pilot-scale evaluation of ozone as a polishing step for the removal of nonylphenol from tank truck cleaning wastewater. *Journal of Environmental Management*, 288, Art.No. ARTN 112396. doi: [10.1016/j.jenvman.2021.112396](https://doi.org/10.1016/j.jenvman.2021.112396) (Impact factor: 6.79) [Open Access](#)
8. Tuezney, S., Lauwens, K., Afshan, S., Rossi, B. (2021). Buckling of stainless steel welded I-section columns. *Engineering Structures*, 236, Art.No. 111815. doi: [10.1016/j.engstruct.2020.111815](https://doi.org/10.1016/j.engstruct.2020.111815) (Impact factor: 4.47) [Open Access](#)
9. Molkens, T., Cashell, K.A., Malaska, M., Alanen, M., Rossi, B. (2021). Performance of structural stainless steel following a fire. *Engineering Structures*, 235, Art.No. 112001. doi: [10.1016/j.engstruct.2021.112001](https://doi.org/10.1016/j.engstruct.2021.112001) (Impact factor: 4.47)
10. Molkens, T., Cashell, K.A., Rossi, B. (2021). Post-fire mechanical properties of carbon steel and safety factors for the reinstatement of steel structures. *Engineering Structures*, 234, Art.No. 111975. doi: [10.1016/j.engstruct.2021.111975](https://doi.org/10.1016/j.engstruct.2021.111975) (Impact factor: 4.47)
11. Fortan, M., Rossi, B. (2021). Lateral Torsional Buckling of Welded Stainless Steel I-Profile Beams: Experimental Study. *Journal of Structural Engineering*, 147 (3), Art.No. ARTN 04020342. doi: [10.1061/\(ASCE\)ST.1943-541X.0002927](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002927) (Impact factor: 3.31)
12. Gatheeshgar, P., Poologanathan, K., Thamboo, J., Toy, K., Rossi, B., Molkens, T., Perera, D., Navaratnam, S. (2021). On the fire behaviour of modular floors designed with optimised cold-formed steel joists. *Structures*, 30, 1071-1085. doi: [10.1016/j.istruc.2021.01.055](https://doi.org/10.1016/j.istruc.2021.01.055) (Impact factor: 2.98)
13. Karabulut, B., Ferraz, G., Rossi, B. (2021). Lifecycle cost assessment of high strength carbon and stainless steel girder bridges. *Journal of Environmental Management*, 277, Art.No. ARTN 111460. doi: [10.1016/j.jenvman.2020.111460](https://doi.org/10.1016/j.jenvman.2020.111460) (Impact factor: 6.79) [Open Access](#)
14. Fortan, M., Rossi, B. (2020). Lateral Torsional Buckling of Welded Stainless-Steel I-Profile Beams: Design and Reliability. *Journal of Structural Engineering*, 146 (12), Art.No. ARTN 04020280. doi: [10.1061/\(ASCE\)ST.1943-541X.0002830](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002830) (Impact factor: 3.31)
15. Ferraz, G., Rossi, B. (2020). On the fatigue behaviour of hot dip galvanized structural steel details. *Engineering Failure Analysis*, 118, Art.No. ARTN 104834. doi: [10.1016/j.engfailanal.2020.104834](https://doi.org/10.1016/j.engfailanal.2020.104834) (Impact factor: 3.11)
16. Dobric, J., Rossi, B. (2020). Column Curves for Stainless Steel Lipped Channel Sections. *Journal of Structural Engineering*, 146 (10), Art.No. ARTN 04020221. doi: [10.1061/\(ASCE\)ST.1943-541X.0002708](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002708) (Impact factor: 3.31)
17. De Coster, J., Liu, J., Van den Broeck, R., Rossi, B., Dewil, R., Appels, L. (2020). Influence of electrochemical advanced oxidation on the long-term operation of an Upflow Anaerobic Sludge Blanket (UASB) reactor treating 4-chlorophenol containing wastewater. *Renewable Energy*, 159, 683-692. doi: [10.1016/j.renene.2020.04.037](https://doi.org/10.1016/j.renene.2020.04.037) (Impact factor: 8.00) [Open Access](#)
18. Fortan, M., Ferraz, G., Lauwens, K., Molkens, T., Rossi, B. (2020). Shear buckling of stainless steel plate girders with non-rigid end posts. *Journal of Constructional Steel Research*, 172, Art.No. ARTN 106211. doi: [10.1016/j.jcsr.2020.106211](https://doi.org/10.1016/j.jcsr.2020.106211) (Impact factor: 3.65)
19. Molkens, T., Rossi, B. (2020). On the Simulation of Real Fire for Post Fire Resistance Evaluation of Steel Structures. *Fire Technology*, 57 (2), 839-871. doi: [10.1007/s10694-020-01025-6](https://doi.org/10.1007/s10694-020-01025-6) (Impact factor: 2.24) [Open Access](#)
20. Fortan, M., Dejans, A., Karabulut, B., Debruyne, D., Rossi, B. (2020). On the strength of stainless steel fillet welds. *Journal Of Constructional Steel Research*, 170, Art.No. 106081, 1-14. doi: [10.1016/j.jcsr.2020.106081](https://doi.org/10.1016/j.jcsr.2020.106081) (Impact factor: 3.65)
21. Dobric, J., Ivanovic, J., Rossi, B. (2020). Behaviour of stainless steel plain channel section columns. *Thin-Walled Structures*, 148, Art.No. ARTN 106600. doi: [10.1016/j.tws.2020.106600](https://doi.org/10.1016/j.tws.2020.106600) (Impact factor: 4.44)

22. Karabulut, B., Lombaert, G., Debruyne, D., Rossi, B. (2020). Experimental and numerical fatigue assessment of duplex welded transversal stiffeners. *International Journal Of Fatigue*, 134 (C), Art.No. 105498. doi: [10.1016/j.ijfatigue.2020.105498](https://doi.org/10.1016/j.ijfatigue.2020.105498) (Impact factor: 5.19)
23. Molken, T., Dobric, J., Rossi, B. (2019). Shear resistance of headed shear studs welded on welded plates in composite floors. *Engineering Structures*, 197, Art.No. ARTN 109412. doi: [10.1016/j.engstruct.2019.109412](https://doi.org/10.1016/j.engstruct.2019.109412) (Impact factor: 4.47) [Open Access](#)
24. Jiménez-Peña, C., Goulas, C., Rossi, B., Debruyne, D. (2019). Influence of hole-making procedures on fatigue behaviour of high strength steel plates. *Journal of Constructional Steel Research*, 158, 1-14. doi: [10.1016/j.jcsr.2019.03.005](https://doi.org/10.1016/j.jcsr.2019.03.005) (Impact factor: 3.65) [Open Access](#)

ii) Conference proceedings or meeting abstracts, peer reviewed to an international standard

1. Molken, T., Cashell, K.A., Malaska, M., Alanen, M., Rossi, B. (2021). Performance of Stainless Steel Structures Following a Fire. In: Eurosteel 2021 Sheffield Steel's coming home, (1411-1420). Presented at the Eurosteel 2021, Sheffield UK, 01 Sep 2021-03 Sep 2021. doi: [10.1002/cepa.1439](https://doi.org/10.1002/cepa.1439) [Open Access](#)
2. Molken, T., Rossi, B. (2020). A framework for reliability-based assessment of structures in post-fire conditions. In: Proceedings of the 11th International Conference on Structures in Fire, (55-66). Presented at the 11<sup>th</sup> international conference on structures in fire, Brisbane, university of Queensland, 30 Nov 2020-02 Dec 2020. ISBN: 978-1-74272-343-3. [Open Access](#)
3. Molken, T., Cashell, K., Rossi, B. (2020). Material properties of structural, high strength and very high strength steels for post-fire assessment of existing structures. In: Proceedings of the 11th International Conference on Structures in Fire, (751-762). Presented at the 11th International conference on structures in fire, Brisbane, University of Queensland, 30 Nov 2020-02 Dec 2020. ISBN: 978-1-74272-343-3. [Open Access](#)
4. Molken, T., Rossi, B. (2019). Simplified bending capacity formulation based on the continuous strength method. In: NSCC 2019. Presented at the Nordic Steel Construction Conference, Copenhagen, 18 Sep 2019-20 Sep 2019. doi: [10.1002/cepa.1154](https://doi.org/10.1002/cepa.1154) [Open Access](#)
5. Molken, T., Rossi, B. (2019). Modelling real fire by the mean of FDS and a 2-zone model for structural post-fire assessment purposes. In: 5th Iberian-Latin-American Congress On Fire Safety (807-817). Presented at the 5th Iberian-Latin-American Congress On Fire Safety, Porto, 15 Jul 2019-17 Jul 2019. ISBN: 978-989-97210-3-6.
6. Saremi, P., Karabulut, B., Rossi, B. (2019). Static Structural Response of a Conceptual Aluminium Bridge. In: 9<sup>th</sup> International Conference on Steel and Aluminium Structures (ICSAS19). Presented at the 9th International Conference on Steel and Aluminium Structures (ICSAS19), Bradford, UK, 03 Jul 2019-05 Jul 2019.
7. Molken, T., Dobric, J., Rossi, B. (2019). Influence of the concrete shear capacity on the failure behaviour of composite decks. In: International Conference for Steel and Aluminium Structures, (931-942). Presented at the International Conference for Steel and Aluminium Structures, Bradford, 03 Jul 2019-05 Jul 2019. ISBN: 978-1-78972-197-3.
8. Molken, T., Dobric, J., Rossi, B. (2019). Headed shear stud welded on welded plates in composite floor applications. In: International Conference for Steel and Aluminium Structures, (943-954). Presented at the International Conference for Steel and Aluminium Structures, Bradford, 03 Jul 2019-05 Jul 2019. ISBN: 978-1-78972-197-3.
9. Molken, T., Rossi, B. (2019). Comparison between the behaviour of single storey steel and concrete structures subjected to fire or accidental events. In: Application of Structural Fire Engineering 2019, (206-212). Presented at the Application of Structural Fire Engineering, Singapore, 13 Jun 2019-14 Jun 2019. Singapore.
10. Molken, T., Rossi, B. (2019). Fire resistance of temporary structures. In: Applications of Structural Fire Engineering 2019, (42-48). Presented at the Applications of Structural Fire Engineering, Singapore, 13 Jun 2019-14 Jun 2019.
11. Molken, T., Rossi, B. (2019). Determination of the structural behaviour of single storey steel buildings in case of fire by a simplified force-based method. In: IFireSS 2019, (1-9). Presented at the

integrating Fire Science, Engineering practice and Design methodologies for a safe and sustainable built environment, Ottawa, 05 Jun 2019-07 Jun 2019.

### iii) Review articles

Palakodeti, A., Azman, S., Rossi, B., Dewil, R., Appels, L. (2021). A critical review of ammonia recovery from anaerobic digestate of organic wastes via stripping. *Renewable & Sustainable Energy Review*, 143, Art.No. ARTN 110903. doi: [10.1016/j.rser.2021.110903](https://doi.org/10.1016/j.rser.2021.110903) (Impact factor: 14.98) [Open Access](#)

### iv) Monographs and Textbooks

Thesis books:

1. Nagels, M., Dewil, R. (sup.), Rossi, B. (co-sup.) (2021). Integrated treatment of non-ionic surfactant containing industrial wastewater: process optimization, material selection and life cycle analysis.
2. Karabulut, B., Rossi, B. (sup.), Lombaert, G. (co-sup.) (2021). Fatigue behaviour of duplex welded details.
3. Jiménez Peña, C., Debruyne, D. (sup.), Rossi, B. (co-sup.) (2020). Fatigue Behaviour of Bolted Connections in Moderately Thick High Strength Steels (HSS).
4. Molken, T., Rossi, B. (sup.) (2020). Post-fire load bearing assessment of industrial steel and stainless steel buildings.
5. Fortan, M., Rossi, B. (sup.) (2020). Fabricated stainless steel beams - Investigating lateral torsional buckling, shear buckling and the strength of fillet welds.

### v) Other outputs, including e.g. spin-outs, software and patents

99.154135 Proposed United Kingdom Patent Application System of Interconnected Haptic Device

## **B. Teaching and Citizenship**

### *Demonstrations and lectures given*

#### Undergraduate teaching at University of Oxford **since 2019**

A3.5	A3 Structural Failure
A5.2	A5 Structures and Materials Laboratory
B9.1	B9 Reinforced Concrete Structures
3YP	Design of a Bridge in a Metropolitan Area (Coordinator since 2020)

### *Details of graduate student supervision and other project supervision*

#### i) Msc by research and Dphil at University of Oxford **since 2019**

Msc by research: *Hybrid welded joints made of duplex 1.4062 and carbon steel (S355/P460) in harsh environment* - Shuang Sun

Dphil :  
 1. *Graded origami honeycomb for energy absorption* - Leo De Waal (Co-supervisor)  
 2. *Sustainable Construction Project Management Practices* - Franco Williams  
 3. Visiting student from Harbin Institute of Technology - Feng Qiu

#### ii) Doctorate at KU Leuven (date of viva) **since 2019**

1. Fabricated stainless steel beams – Investigating lateral torsional buckling, shear buckling and the strength of fillet welds **18.09.2020** - Maarten Fortan
2. Fatigue Behaviour of Bolted Connections in Moderately Thick High Strength Steels (HSS) **07.12.2020** - Carlos Jiménez Peña Co-supervisor

3. Post-fire load bearing assessment of industrial steel and stainless steel buildings **19.10.2020** - Tom Molken
4. Fatigue behaviour of duplex welded details **15.04.2021** - Burak Karabulut
5. Integrated treatment of non-ionic surfactant containing industrial wastewater: process optimization, material selection and life cycle analysis **18.11.2021** - Maarten Nagels, Co-supervisor
6. Stainless steel members under combined torsion and bending - Kathleen Lauwens
7. Materials selection and corrosion behaviour of steel alloys for the long term underground storage of nuclear waste - Brent Verhoeven, Co-supervisor
8. Behaviour of hybrid stainless-carbon steel members - Gonalo Daniel Teixeira Ferraz
9. Development of viable 3D-printing methods for digital fabrication of reinforced concrete - Olena Shkundalova
10. Computational modelling of fatigue in wire-arc additive manufactured steel components - Xionfeng Ruan

iv) Doctorate abroad as Co-supervisor *since 2019*

Experimental study of welded austenitic stainless steel I-section beam-columns - Nina Feber, Co-supervisor with Michal Jandera from Czech Technical University in Prague

*Committee work and associated administration*

- From TT 2021, I will sit in the **Equality and diversity** committee of the department of Engineering Science.
- I am **Equality and Diversity Fellow** of the New College of Oxford, where I take on the **BAME** related topics.
- I am the **Sustainability Fellow** of my college, and as such, I have been reviewing and advising on the sustainable practices of the college (energy efficiency, travel footprint, and food waste) as well as participated in the biodiversity audit of Oxford colleges and contributed to its dissemination to the public.

*Other contributions to the life and culture of the subject discipline*

- I participate to the access and **outreach activities** of my College and the department (open days, WIE day).
- I am **Digital Academic Mentor** for the Oxford UNIQ+ programme, contributing to mentoring of undergraduate students.
- For the new Gradel Quadrangles project in Oxford, I submitted a Carbon Champion case-study to The Institution of Civil Engineers (ICE) on the sustainability aspects of the building along its lifecycle for training purposes and was awarded **Carbon Champion Status** (<https://www.srm.com/news-and-comment/gradel-quadrangles-oxford/>). This will enable the project team and me to communicate more broadly about the sustainability aspects of the project and the close collaboration between the academia and the building contractors.
- I am working with the **Science Museum** in London who are running events that connect their family visitors with the cutting edge of STEM research and latest thinking around climate change and sustainability.

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