

# DR CHRISTIAN LAURENT

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Last updated: October 16, 2021

I am a technologically astute research scientist. My training has been interdisciplinary and as a result I have learnt to collaborate with others and also how to manage a team. I have excellent presentation and public speaking skills, having delivered talks in the UK, on the continent, and in China. I am grateful to numerous sponsors and scholarships that supported my scientific work and enabled me to pass my doctoral examination without corrections.

During the pandemic I read for a postgraduate diploma in law and was awarded a prestigious scholarship from the Honourable Society of Linsoln's Inn.

I am now working as a Technical Author for the cyber security company Darktrace.

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# 1 Education

## PG.Dip. Law

Pass—BPP University Law School

## Ph.D. Mechanical Engineering

Awarded without corrections—University of Southampton 2015-2020

**Thesis:** ‘The Mechanical Properties of Primary Feathers’

My research established the bird feather shaft as a thin layered laminate. It used Synchrotron-Radiation Computed Tomography, Raman spectroscopy and mechanical testing to accomplish three primary objectives:

1. To image and quantify layup geometry in a large number of primary flight feathers, from a sample which spans multiple phylogenetic and ecological niches.
2. To investigate material composition and observe whether or not the material varies between layers.
3. To mechanically test pieces of feather shaft and analyse the results from an approach based on Classical Laminate Theory, which considers both layup geometry and material.

Python, MATLAB and Bash programming were a key part of the project.

PDF Certificate

## M.Res Vertebrate Palæontology

Conferred with Distinction—University of Southampton 2013-2014

**Thesis:** Nanomechanical properties of bird feather rachises: exploring naturally occurring fibre reinforced laminar composites

Thesis published by the Royal Society (see Publications)(>10,000 reads)

PDF Certificate

## B.Sc (Hons) Oceanography with Marine Biology

Conferred with second class honours (upper division)-II:I  
University of Southampton, 2010-2013

**Thesis:** ‘On the seasonal variation of polychaete worm assemblages in South east Thailand’

Modules including including quantitative methods, statistics and game theory

PDF Certificate

## Secondary Education

### International Baccalaureate Diploma

Dartford Grammar School, 2003-2010

35 POINTS\*: Biology, Chemistry, French (Higher) — Maths, Politics, English (standard)

*\* Approximately equivalent to  $4\frac{1}{2}$  A's at A level (UCAS).*

PDF Certificates

### GCSEs

11: A\*(6), A(4), B(1)

Maths, French and Spanish taken a year early

PDF Certificates

## 1.1 Marks

### PG. Dip.

Subject	Mark
Tort Law	64
Public Law I	61
Company Law	60
Contract Law	50
Criminal Law	50
Public Law II	64
Land Law	65
Trusts Law	70

### Ph.D.

Subject	Mark
High Performance Computing	Audit
Introduction to Python	Audit
Experimental Mechanics	Audit
Composites Engineering Design and Mechanics	Audit
Mechanics, Structures & Materials	Audit

### M.Res.

Subject	Mark
Research Project	80
Contemporary Topics	76
Vertebrate Palaeontology of the Isle of Wight	72
UN Convention on the Law of the Sea	60
Deep Sea Ecology	54

B.Sc.

	Subject	Mark
<b>First year: 2010/11</b>		
	Physical Oceanography I	76
	Marine Invertebrates	64
	IT, Communications, Field & Lab Skills	63
	Earth & Ocean Systems	62
	Introduction to Ocean Biogeochemistry	60
	Introduction to Functional Marine Biology	57
	Introduction to Marine Ecology	54
	Introduction to Maths for Chemists and Oceanographers	42
<b>Second year: 2011/12</b>		
	Phytoplankton & Primary Production	68
	Introduction to Marine Molecular Biology	66
	Marine Vertebrates	63
	Quantitative Methods in Biological and Environmental Sciences	60
	Ecological Process in the Marine Benthos	60
	Ocean Observation, Measurements & Data	58
	Coastal & Estuarine Oceanography II	54
	Coastal & Estuarine Oceanography I	49
<b>Third year: 2012/13</b>		
	Phylogenetics & Evolution	75
	Oceanography Research Training	72
	Inshore Fisheries & Aquaculture	64
	Applied Oceanography & Fieldwork	62
	Zooplankton Ecological Processes	61
	Evolution	60
	Marine Molecular Biology	60

## International Baccalaureate

Subject	Mark
<b>Higher Level</b>	
Biology	6
French	5
Chemistry	4
<b>Standard Level</b>	
Politics	7
Maths	6
English	6
Additional	1

## GCSEs

Subject	Mark
<b>2007</b>	
French (early entry)	A*
Maths (early entry)	A
<b>2008</b>	
Spanish (early entry)	A*
Science	A*
Additional Science	A*
Physical Education	A*
English Literature	A*
Information and Communication Technology	A
Design Technology	A
English Language	A
Geography	B

## 2 Other Qualifications

### 2.1 Driving Licence

Full UK Driving licence, no points. CBT & MOD1 motorcycle license. A1 licence pending.  
PDF

### 2.2 Diving

#### 2.2.1 Professional

- Instructor Development Course Staff Instructor
- Master Scuba Diver Trainer
- Dry Suit Specialty Instructor
- Underwater Naturalist Specialty Instructor
- Underwater Photographer Specialty Instructor
- Night Diver Specialty Instructor
- Drift Diver Specialty Instructor
- Deep Diver Specialty Instructor
- Enriched air (Nitrox) Specialty Instructor
- Peak Performance Buoyancy Specialty Instructor
- Project AWARE Specialty Instructor
- AWARE Coral Reef Conservation Specialty Instructor
- Care for Children with AED Instructor
- Open Water Scuba Instructor
- Emergency First Response Instructor
- Divemaster

#### 2.2.2 Non-professional

- Gas Blender
- Oxygen Provider
- Tec 40
- Tec 45
- CCR Diver 40 (Hollis Prism)
- CCR Diver 45 (Hollis Prism)
- SCR Diver 40 (Hollis Explorer)
- SCR Diver 45 (Hollis Explorer)

- Rebreather Diver
- Advanced Rebreather Diver
- Open Water Diver
- Advanced Open Water Diver
- Adventure Diver
- Whale Shark Biology Specialty Diver
- Wreck Specialty Diver
- Drift Specialty Diver
- Underwater Photography Specialty Diver
- Deep Specialty Diver
- Enriched Air Specialty Diver

Emergency First Response PDF Certificates

Gas Blender Card PDF

Oxygen Provider Card PDF

PADI Qualification Cards PDF

PADI Certificates PDF

### **2.3 Lifeguarding**

- National Pool Lifeguarding Qualification (2012: lapsed)
- National Pool Lifeguarding Qualification (2008: lapsed)

PDF Certificate

### **2.4 Fitness Instructor**

Awarded by CYQ (Central YMCA Qualifications) 01/07/2020

- Level 2 Fitness Instructor (2010)

PDF Certificate

### **2.5 Law**

- LexisLibrary Advanced Certificate
- LexisLibrary Basic Certificate
- WestLaw Advanced Certificate
- WestLaw UK Basic Certificate

PDF Certificates

## **2.6 Care**

Awarded via the Training Organisation for the Personal Social Services (TOPSS) 21/03/2011

- Effective Communication
- Death, Dying and Bereavement
- Managing challenging behaviour
- Principles of Care
- Role of the Care Worker
- Risk assessment for Health and Safety
- Moving and Handling in the Care Home
- Food Hygiene in the Care Home
- Health and Safety in the Care Home
- Fire Prevention in the Care Home
- Needs of the Service User
- Fire Drills and Evacuation in the Care Home
- Abuse in the Care Home
- Infection Control in the Care Home

PDF Certificates

## **2.7 Security**

Awarded by the British Institute of Inn-keeping

- Door Supervisor Level 2
  - Working as a Door Supervisor
  - Conflict management in the Private Security Industry
  - Physical intervention skills in the private security industry

PDF Certificate

## **2.8 Other Documents**

### **2.8.1 Passport**

British Passport PDF

### **2.8.2 Birth Certificate**

PDF

### **2.8.3 National Insurance**

PDF

### 3 Publications

- Laurent, C.M.**, Wang, X. & Li, Z. (In Review) Exceptional preservation of feather microstructures in amber from the Middle-Cretaceous of Myanmar.
- Laurent, C.M.**, Dyke, G., Cook, R., Dyke, J. & De Kat, R. (Accepted) Spectroscopy on the Wing: Investigating possible differences in protein secondary structures in feather shafts of birds using Raman spectroscopy. *Journal of Structural Biology* 211.1.107529
- Laurent, C.M.**, Ahmed, S.I., Boardman, R.P., Cook, R.B., Dyke, G., Palmer, C., Schneider, P., & DeKat, R. (2019) Imaging techniques for observing laminar geometry in the feather shaft cortex. *Journal of Microscopy* 277(3) 2019, pp. 1–6
- Zitouni, S., **Laurent, C.M.**, Dyke, G. & Jalil, N. (2019) An Abelisaurid Ilium from the Upper Cretaceous (Cenomanian) of Morocco. *Plos ONE* 14(4) e0214055
- Fernandez, M.S, Wang, X., Vremir, M. **Laurent, C.M.**, Naish, D. Kaiser, G & Dyke, G. (2019) A mixed vertebrate nesting assemblage from the Transylvanian Late Cretaceous. *Nature Scientific Reports*, 9,(1) 1944
- Laurent, C. M.** (2016). Review: Evolutionary Biomechanics: Selection , Phylogeny and Constraint. *Quarterly Review of Biology*, 90(2).
- Laurent, C. M.**, Palmer, C., Boardman, R. P., Dyke, G., & Cook, R. B. (2014). Nanomechanical properties of bird feather rachises: exploring naturally occurring fibre reinforced laminar composites. *Journal of The Royal Society Interface*, 11(101).

### 4 Conference presentations

- Laurent, C. M.** & Dyke, G. - The rediscovery of Burmite and its palaeontological significance for understanding the development of Avian flight in the mid-Cretaceous. *12th Romanian Symposium of Palaeontology*, Cluj-Napoca, Romania. 2019.
- Dyke, G., **Laurent, C. M.** & Lendvai, A. The evolution of bird feathers: New and old evidence from the fossil record. *12th Romanian Symposium of Palaeontology*, Cluj-Napoca, Romania. 2019.
- Laurent, C.M.**, Ahmed, S.I. Cook, R. B. & de Kat, R. Natural laminates: automated fibre direction and layer thickness from synchrotron CT scans of feathers, *Tomography for Scientific Advancement (ToScA)*, Southampton, UK. 2018. UK. 2019.
- Laurent, C. M.**, Lendvai, Á., Kövecsi, Sz.-A. & Dyke, G. Fossil evidence for the evolution of feather structure. *Ioan Popescu Voitesti Annual Scientific Session*, Babeş-Bolyai University, Cluj-Napoca, Romania. 2018.
- Laurent, C.M.**, Ahmed, S.I. Cook, R. B. & de Kat, R. Quantifying laminar layup around and along a bird feather shaft. 6th Annual Meeting of *Tomography for Scientific Advancement (ToScA)*, Warwick, UK. 2018.
- Dyke, G., **Laurent, C.M.**, Lendvai, Á., Kövecsi, Sz.-A. & Manciu, R. Documenting the evolution of avian wing shapes. 19th Annual Meeting of the *Gesellschaft für Biologische Systematic Vienna*, Austria. 2018
- Laurent, C.M.**, Ahmed, S.I., Cook, R. B. & de Kat, R. (2018) Inside a feather II: Quantifying laminar layup around and along a bird feather shaft. *Society for Integrative and Comparative Biology Annual Meeting*, San Francisco USA.
- Dyke, G., **Laurent, C.M.**, Lendvai, Á., Kövecsi, Sz.-A. & Manciu., R. Documenting the evolution of avian wing shapes (BIRDWING). *Ioan Popescu Voitesti Annual Scientific Session*, Babeş-Bolyai University, Cluj-Napoca, Romania. 2017

**Laurent, C.M.**, Schneider, P., Dyke, G., Boardman, R. P., Palmer, C., Cook, R. B. & de Kat, R. (2017) Inside a feather: laminar layup varies around and along bird feather shafts. *Wessex DTN Annual Congress*.

**Laurent, C.M.**, Schneider, P., Dyke, G., Boardman, R. P., Palmer, C., Cook, R. B. & de Kat, R. (2017) Inside a feather: laminar layup varies around and along bird feather shafts. *Society for Integrative and Comparative Biology Annual Meeting*, New Orleans USA.

## 5 Invited talks

**Laurent, C.M.** (2018) The evolution, form and function of feathers. Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

**Laurent, C.M.** (2017) Synchrotron CT scanning of natural fibrous materials. University of Nyiregyhaza, Hungary.

**Laurent, C.M.** (2017) Inside a feather. Wessex DTN Annual Congress. University of Bristol, UK.

**Laurent, C.M.** (2017) Feathers, fibres and forces. University of Debrecen, Hungary.

**Laurent, C.M.** (2017) Raman spectroscopy: a powerful technique in structural biology. University of Debrecen, Hungary.

**Laurent, C.M.** (2016) The mechanical properties of primary flight feathers. University of Debrecen, Hungary.

**Laurent, C.M.** (2016) The mechanical properties of primary flight feathers. University of Babeş Bolyai, Romania.

**Laurent, C.M.** (2015) The evolution of the integument. Vertebrate evolution and phylogenetics lecture series. National Oceanography Centre, UK.

**Laurent, C.M.** (2014) The evolution of the integument. Vertebrate evolution and phylogenetics lecture series. National Oceanography Centre, UK.

## 6 Honours and Awards

2018	Poster Award	Aerodynamics, Astronautics and Computational Engineering Annual Competition, University of Southampton
2017	Best presentation	Wessex DTN Annual Congress, University of Bristol
2016	Highest-ranked proposal	Diamond light source I-13 beamline.
2015	SPITFIRE studentship	National Environment Research Council
2015	Tizard Scholarship	University of Southampton
2015	Elite Instructor Award	Professional Association of Diving Instructors
2014	Highest graduating student	M.Res Vertebrate Palaeontology, University of Southampton

## 7 Funding and Grants

2014 £1.5k National Oceanographic Library "Article Processing Charge"

2014 £92k NERC PHD Studentship, "The mechanical properties and evolution of feathers", principal investigator

2014 £45k University of Southampton Tizard Scholarship, "The mechanical properties and evolution of feathers", principle investigator

2015 €70k Swiss Light Source beamtime, principal investigator

2016 £45k Diamond Light Source beamtime, principal investigator  
 2017 £110k Diamond Light Source beamtime, principal investigator  
 2018 €230k Romanian Academy of Sciences, "Two and three-dimensional bird wing evolution over the history of dinosaurs and birds.", co-investigator  
 2018 £6k SPITFIRE DTP travel grant, "Structured light measurement of avian wings", principal investigator  
 2018 £2.5k Union Southampton equipment grant, main proposer  
 2019 £1k Hartley Library "Article Processing Charge"  
 2020 £2k BPP University Law School, Career Commitment Scholarship  
 2021 £n.a. Honourable Society of Lincoln's Inn, Lord Denning Scholarship

**Total:** >£600k

## 8 Supervision (S), co-supervision (C) and advisory (A) activities

2018 (C) M.Sc Thesis, Dragos Andrei, Babeş-Bolyai University, Romania.  
 2018 (C) M.Sc Thesis, Robert Manciu, University of Babeş-Bolyai University, Romania.  
 2018 (C) B.Sc Thesis, Philip Cumner, 'Using end-to-end machine learning to perform beat by beat analysis on music'  
 2017 (A) M.Sc Thesis, Alex Perry 'Telematics data modelling: quantifying the effect of electric vehicles.', University of Southampton  
 2016 (C) M.Res Thesis, Siobhan King, 'The bird feather rachis: a morphological and statistical study.' University of Southampton  
 2016 (A) B.Sc Thesis, Charles Roberts, 'The relationship between expansion factor and modularity in social network graphs.' University of Southampton \*Awarded highest mark for dissertation (97%)

## 9 Teaching

2016, 2017, 2018	School of Engineering Sciences	Introduction to Python
2016, 2017	School of Engineering Sciences	Aerodynamics
2014, 2015	School of Ocean and Earth Science	Vertebrate Phylogenetics

## 10 Professional Appointments

**Technical Author** Darktrace, 2021—

**Contributor** Law Answered Publishing, 2020-21

**Visiting Researcher** Institution of Vertebrate Palaeontology and Palaeoanthropology, Chinese Academy of Sciences, Beijing, China, 2018

**Post-doctoral Researcher** University of Babeş-Bolyai, Romania, 2017-2020

**Visiting Researcher** Diamond Light Source, Harwell, UK, 2018-2020

**Visiting Researcher** Swiss Light Source, Villigen, Switzerland, 2017-2018

**Reviewer (ad-hoc)** Micron (Wiley), 2019

Proceedings of the National Academy of Sciences (PNAS), 2019

Nature Biological Communications, 2018

Historical Biology (Taylor & Francis), 2017

**Editor** Expert English, 2018-2021

Crimson Interactive (Enago), 2018-2019

**Master Instructor** TAL SCUBA, ongoing — Lutwala Dive (Indonesia), 2014-2016

11 specialty instructor ratings, Gas blending technician, First aid instructor

**Director** Laurent Securities 2011

**Volunteer** Southampton General Hospital, 2014

**Housekeeper** The Royal Household at Buckingham Palace, 2012

## 11 Society Membership

Honourable Society of Lincoln's Inn (Member for life)

Tomography for Scientific Advancement Society (2019)

Royal Microscopical Society (2018)

European Microscopy Society (2018)

Society of Integrative and Comparative Biology (2017, 2018)

## 12 Continuing Professional Development

### 12.1 Cyber security

Networking 101, Darktrace, 2021

Introduction to email security, Darktrace, 2021

Cyber threat analysis, Darktrace, 2021

Advanced Networking, Darktrace, 2021

## **12.2 Academic**

Postgraduate demonstration training II, University of Southampton, 2017

Postgraduate demonstration training I, University of Southampton, 2016

## **12.3 Technical**

Electron microscopy and ultramicrotome training course, University Hospital Southampton, 2018

## **12.4 Legal**

See Legal Work Experience section.

# **13 Legal Work Experience**

## **Law Answered Publishing, Self-employed, October 2020-2021**

I reviewed and edited the PGDL Answered Core Guide, and wrote a substantial contribution to the SQE preparatory materials.

## **BPP University Law School Advocacy Course, February 2021**

I took part in a one-day advocacy course, set around a family law scenario and culminating in a mock trial.

The trainer said my questions were well structured, and that I lead the witness very well in cross examination, and applied the right amount of pressure with panache. However, I did struggle not to ask closed questions during chief.

## **BPP University Law School Internal Moot. January 2020**

I won a moot based on primary victim hood.

The judge told me I seemed well prepared and was very good on judicial intervention.

## **Lincoln's Inn Mooting Society**

I took part in a moot set around standing to bring an application for judicial review.

## **St Philips Chambers: Mini-pupillage, November 2020**

I observed an employment tribunal concerning a man's claim of discrimination due to pregnancy and maternity leave. The particular difficulties of dealing with litigants in person became apparent but it showed me why non-represented people need to be treated with sympathy and compassion by opposing counsel and the judge.

## **Cambridge County Court: Marshalling, March 2020**

I sat with HHJ Walden-Smith, HHJ Yelton and DJ Raggett over three days at the Cambridge County Court. I saw complex legal argument during a 2-day multi-track dispute about the Defendant's right to park; a number of care cases, including one with an interesting jurisdictional issue; a credit hire trial and a number of applications. I was interested to see the conventions of court, and issues of witness handling, from the Judge's perspective. I found it interesting to observe how inconsistencies are revealed when two seemingly strong cases are put against one another.

### **Fenners Chambers: Mini-pupillage, February 2020**

I observed a range of junior work, which included civil, family and criminal matters. I was particularly interested to see the complex negotiations leading to settlement of a four-party RTA claim at Bury St Edmunds County Court. Also how a seemingly robust case was successfully undermined through cross-examination during the final hearing of a non-molestation application at Luton County Court.

### **Inner Temple Insight Evening, October 2019**

I attended an insight evening prior to applying to Law School.

### **Cambridge Magistrates Court, December 2018**

Before deciding on a career change I attended Magistrate's Court and observed a trial about the defendants duty to appear for electronic tagging.

## **14 Languages**

**English** Mother tongue

**French** Intermediate: I have collaborated with francophone colleagues at the Sorbonne and another university in Morocco. Written and spoken work was exclusively in French and included a large translation from French to English for publication. I have also taught a number of SCUBA courses in French.

I have a higher-level international baccalaureate, and an A\*at GCSE, taken a year early.

**Spanish** Basic: I have A\*at GCSE, taken a year early.

**Russian** Basic: I took 10 lessons in conversational Russia in 2016, and travelled from Moscow to Beijing in 2018.

**Bahasa Indonesia** Basic: I spent a year working in Indonesia, my bahasa was conversational / tourist level.

**Mandarin Chinese** Basic: I took 20 lessons in 2018 before spending 3 months working at the Chinese Academy of Sciences in Beijing. My mandarin is tourist proficient.

*There is a concise version of this CV on my personal website, along with a breakdown of competencies and personal attributes, as well as past references.*

<http://www.christianlaurent.me>