

# Curriculum Vitae – Professor Lucy Carpenter, MBE FRS FRSC

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## 1. Research career and qualifications

Date	Place	Activity
2020-	Univ. of York (UoY)	Professor of Physical and Atmospheric Chemistry (currently teaching three modules in Atmospheric Chemistry and Analytical Chemistry to up to 250 undergraduate students and tutoring a range of physical chemistry subjects)
2016-20	UoY	Chair of Research Committee and Deputy Head of Department
2012-16	UoY	Head of Physical and Atmospheric Chemistry (0.85FTE)
2009-	UoY	Professor of Physical and Atmospheric Chemistry (0.85FTE)
2006-09	UoY	Senior Lecturer (0.8 FTE)
2000-06	UoY	Lecturer in Physical Chemistry (partly at 0.75 FTE)
1999-2000	University of Leeds, UK	Postdoctoral research, "Laser-induced fluorescence for the detection of OH and HO <sub>2</sub> radicals" with Prof. Dwayne Heard and Prof. Mike Pilling
01/1999-06/1999	CSIRO, Australia	Visiting scientist, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Melbourne, Australia
05/1996-06/1999	University of East Anglia	Postdoctoral research, "Tropospheric halogens - effect on ozone" with Prof. Peter Liss, FRS
10/1992-04/1996	University of East Anglia	PhD project, "Measurements of peroxy radicals in clean and polluted atmospheres" Supervisor Prof. Stuart Penkett
07/1991-09/1992	Mexico City, Mexico	R&D Internship at Proctor and Gamble, Mexico City, followed by voluntary work and travelling
03/1988-06/1991	University of Bristol, UK	BSc degree course in Chemistry. First Class honours awarded.

Note that I worked part-time between 2003 and 2016 and had two periods of maternity leave in 2003 and 2006.

## 2. Honours and awards

Member of the Order of the British Empire (MBE), 2022, awarded for services to atmospheric chemistry.

Elected Fellow of the Royal Society, 2019

Royal Society Wolfson Research Merit Award, 2018

Royal Society of Chemistry Tilden Award, 2017

Royal Society Rosalind Franklin Award, 2015

Philip Leverhulme Prize in 'Earth Ocean and Atmospheric Sciences', 2006

Vice-Chancellor's Anniversary Lectureship, 2005

## 3. Service to the community

### International

- Co-chair of iCACGP-IGAC Joint International Atmospheric Chemistry Conference, Manchester, UK, 2022
- Scientific Steering Committee of the WMO/UNEP Scientific Assessments of Ozone Depletion, 2020 –
- Lead chapter author on WMO/UNEP Scientific Assessments of Ozone Depletion, 2014 and 2018
- Chair, WMO Global Atmospheric Watch Science Advisory Group for Reactive Gases (2018-21)
- Scientific Advisory Board of the Max Planck Institute for Chemistry in Mainz, 2020 -
- External Advisory Board member for the NSF centre CAICE (Center for Aerosol Impacts on Chemistry of the Environment), UC San Diego, (2019 - ).
- Associate Editor, *Science Advances* (2021 - )
- Chair of the RSC Faraday Discussions conference "Atmospheric Chemistry in the Anthropocene", 2017
- Steering committee member of iCACGP (International Commission on Atmospheric Chemistry and Global Pollution) (2014-2018)
- Member of Editorial Board of the *Journal of Atmospheric Chemistry* (2010-2017)
- Member of Editorial Board of the *Atmospheric Chemistry and Physics* (2001-2011)
- Convenor and co-convenor of Atmospheric Halogen sessions at EGU conferences (2010-2014)

### UK

- Chair of UKRI Future Leaders Fellowships panels (2018, 2020, 2021, 2022, 2023)
- Chair NERC Atmospheric Sciences/Climate/ Oceanography Peer Review Panel (2014-2018)
- Member of Excellence Panel for NERC Evaluation of Centres (2020)
- Member of the Board of Trustees, Plymouth Marine Laboratory (PML) (2022 – )

- Mentor for Royal Society Fellows (x 2) as part of Royal Society mentoring scheme; Mentor for 2 PML Scientists (2018- )
- Member of the Royal Society Selection Committee (Earth and environmental science) 2020-
- Member of the Royal Society Hooke Committee (2020-)
- Member of the Royal Society Rosalind Franklin Award Committee Panel (2016-2020)

#### 4. Other examples of scientific leadership

- Co-founder of the Cape Verde Atmospheric Observatory (CVO) in 2005 and led its inclusion as a “global” WMO Global Atmospheric Watch (GAW) station in 2009.
- Co-founder of the University of York Wolfson Atmospheric Chemistry Laboratories (WACL) and co-investigator on the Wolfson Foundation Capital grant for the WACL building (2013).
- Received >£16M over more than 50 grants since first academic appointment in 2000, including £1.7M ERC Advanced grant in 2019 (“Ozone dry deposition to the sea surface microlayer”)
- Led multiple large UK research consortia and a mission/chief scientist for field campaigns including in the Canadian Arctic in Feb 2008, an Arctic cruise in July 2013 and UK FAAM aircraft field campaigns in Guam, Jan 2014 and in Cape Verde, Feb 2020.

#### 5. Conference Contributions

5-10 invited talks per year at meetings and conferences round the world. Selected recent invited talks:

- ACS Spring Meeting: Bridging the Interfaces of Atmospheric Chemistry Symposium (virtual) Mar 2023.
- CATCH (Cryosphere and Atmospheric Chemistry) workshop (virtual) May 2022.
- 8th International Symposium on Gas Transfer at Water Surfaces: GTWS, Plymouth, May 2022. *Key note*
- Swiss Chemical Society Spring meeting “Chemistry and the Environment”, April 2021. *Key note*
- Stichting PAC symposium, Amsterdam, March 2019. *Plenary*
- Atmospheric Chemical Mechanisms (ACM) Conference, Davis, USA, Dec 2018. *Plenary*
- 7th EuCheMS Chemistry Congress, Liverpool, Aug 2018 *Key note*
- Gordon Research Conference (GRC) on Ocean Biogeochemistry, Hong Kong, 2018. *Invited*

#### 6. Outreach examples

- Numerous public lectures, including at the Hay Festival and the BA Annual Science Festival, school talks and speeches, and annual “Science live: A-level” talks for ~1000 Chemistry students
- WMO GAW Training Webinar on Reactive Gases (online) Sept 2021
- Organised and delivered science shows for primary school children
- Co-author of several public outreach articles.
- Organised and ran a 3-day summer school on air pollution and sensors for secondary school children
- Contributions to promoting women in science include as chair of an all-female science panel discussion in association with the Royal Society at the Hay Festival, as a speaker and mentor at a RSC Joliot-Curie Conference, and as a contributor to the UoY Department of Chemistry’s Athena Gold submission.

#### 7. Research Group

Current group includes 9 PhD students and 5 postdoctoral associates. Since 2000 have supervised 20 PhD students and 17 postdocs. *Example career destinations of previous group members:*

Dr Liselotte Tinel – Assistant Professor at the Centre for Education, Research and Innovation in Energy Environment, IMT Lille Douai, France

Dr Chris Reed – Instrument scientist at NERC Facility for Airborne Atmospheric Measurements

Dr Charlotte Jones – Senior Air Quality Science Policy Advisor at DEFRA

Dr James Reynolds – Senior Lecturer at Department of Chemistry, Loughborough University

Dr Rachel Dunk – Principal Lecturer, Manchester Metropolitan University

#### 8. Publication summary

Published ~180 articles that have been cited >12,000 times and have an “h”-factor of 63 (Google Scholar), including invited reviews on atmospheric halogen chemistry and ocean-atmosphere exchange.

Selected articles:

Extensive field evidence for the release of HONO from the photolysis of nitrate aerosols, Andersen, S.T., L.J. Carpenter, C. Reed et al., *Science Advances*, doi: 10.1126/sciadv.add6266, 2023.

Marine iodine emissions in a changing world, Carpenter, L.J. et al. *Proc. Math. Phys. Eng. Sci.* 477, 2247, 17, 2021.

A synthesis inversion to constrain global emissions of two very short lived chlorocarbons: dichloromethane, and perchloroethylene, Claxton, T. et al., *J. Geophys. Res.: Atmospheres*, doi: 10.1029/2019JD031818, 2020

Global impacts of tropospheric halogens (Cl, Br, I) on oxidants and composition in GEOS-Chem, Sherwen, T. et al.. *Atmos. Chem. Phys.* 16, 12239-12271, 2016.

Atmospheric iodine levels influenced by sea surface emissions of inorganic iodine, Carpenter, L. J., MacDonald, S. M., Shaw, M. D., et al. *Nature Geoscience*. 6, 108-111, 2013.

Extensive halogen-mediated ozone destruction over the tropical Atlantic Ocean, Read, K. A. et al. *Nature*, 453, 1232, 2008