

James David Pickering

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Committed scientific educator with a PhD in physical chemistry. Proven excellent scientific communicator with a passion for educating, inspiring, and exciting young scientists.

Employment History

Postdoctoral Research Fellow

Weidner Group, Department of Chemistry, Aarhus University
SFG Spectroscopy of ice-nucleating proteins. Horizon 2020 Grant 819039 F-Biolce

Aarhus, DK
Oct 2020 - Present

Postdoctoral Research Associate

Burt Group, Department of Chemistry, University of Oxford
Imaging Chemical Dynamics with Ultrafast Laser Spectroscopy. EPSRC Grant EP/S028617/1.

Oxford, UK
Oct 2019 - Oct 2020

Non-Stipendiary Lecturer in Mathematics for Chemistry

Merton College, University of Oxford

Oxford, UK
Oct 2019 - Oct 2020

Stipendiary Lecturer in Physical and Theoretical Chemistry

Merton College, University of Oxford

Oxford, UK
Oct 2019 - Oct 2020

Stipendiary Lecturer in Physical and Theoretical Chemistry

Magdalen College, University of Oxford

Oxford, UK
Oct 2019 - Oct 2020

Physical Chemistry Teaching Fellow

Department of Chemistry, University of Leicester

Leicester, UK
Jan 2019 - May 2019

Postdoctoral Research Fellow

Stapelfeldt Group, Department of Chemistry, Aarhus University
Ultrafast imaging of photochemical processes in helium droplets. ERC Grant 320459 DropletControl.

Aarhus, DK
Oct 2018 - Dec 2018

Summer Intern

Department of Chemistry, University of Oxford
Developing experiments for the undergraduate teaching laboratories.

Oxford, UK
2013-2015

Education

Aarhus University

PhD Chemistry, Supervisor: Prof. Henrik Stapelfeldt.
Thesis: 'Alignment and Imaging of Weakly Bound Molecular Complexes Embedded in Helium Nanodroplets'.

Aarhus, DK
2015 - 2018

Jesus College, University of Oxford

MChem Chemistry (Hons), First Class

Oxford, UK
2011 - 2015

Notley High School and Braintree Sixth Form

IB Diploma, 40 points, 776 HL, 665 SL

Braintree, UK
2004 - 2011

Awards & Qualifications

Higher Education Academy

Associate Fellowship.

2019-Present

Jesus College, University of Oxford

College Prize for Performance in University Examinations

2015

Ferdinand Prize for Meritorious Work in Chemistry

2015

Open Exhibition

2012-2015

Teaching Experience

Undergraduate Teaching

Small-Group Tutorial Teaching (2-6 students per class)

Physical and Theoretical Chemistry*, University of Oxford. 50 total students across two colleges.

2019-2020

Mathematics for Chemistry*, University of Oxford. 8 Students in total.

2019-2020

Physics for Chemistry*, University of Oxford. 6 students in total.

2019-2020

Physical Chemistry*, University of Leicester. 20 students in total.

2019

Class/Workshop teaching (6-20 students per class)

Physical Chemistry*, University of Leicester. 80 students in total. 2019

Mathematics for Chemistry*, University of Leicester. 80 students in total. 2019-2020

Assessment Marking

Problem-based learning exercises, University of Leicester. 40 students in total. 2019

MChem project presentations, University of Leicester. 15 students in total. 2019

Assessment of Computational Chemistry Coursework, University of Leicester. 40 students in total. 2019

Laboratory Demonstrating

Senior Demonstrator in Physical Chemistry Teaching Laboratory, University of Leicester 2019

Resources Developed

Ultrafast Optics: For Chemists (seminar handout), University of Oxford. 2020

Short explanatory notes for revision (6 notes), University of Oxford 2020

Velocity-Map Imaging Spectrometer Simulation (explanatory handout), University of Oxford 2020

Blackboard VLE Revision Quizzes (physical chemistry and mathematics), University of Leicester. 2019-2020

Introductory Quantum Mechanics (6 lecture course), University of Leicester. 2019

Data Analysis Using Python (Workshop Course), University of Leicester. 2019

Postgraduate Teaching

MChem/PhD Seminar

Ultrafast Optics and Lasers: For Chemists, University of Oxford 2020

Supervised Students

Multiple BSc/MChem/PhD students trained in safe use of high-intensity laser systems and high vacuum apparatus. 2015-2021

Two BSc project students co-supervised, Aarhus University 2017

*Includes all courses commonly taught in undergraduate physical chemistry and mathematics - Thermodynamics, Quantum Mechanics, Statistical Mechanics, Spectroscopy, Kinetics, Magnetic Resonance, Photochemistry, Surface Chemistry, Soft Condensed Matter, Chemistry of Solids, Multivariate Calculus, Linear Algebra, Vectors, Electromagnetism, Classical Mechanics.

Administrative Responsibilities

Merton College, University of Oxford Undergraduate Admissions

Pre-interview written assessment (setting and marking). 2020

Physical chemistry and mathematics entrance interviews (question design and conducting interviews). 40 applicants. 2020

Leicester University Undergraduate Admissions

Assistance with undergraduate open days. 2019

Selected Conference Activity & Invited Talks

ACS Spring Meeting

Talk entitled "Fatty acids at seawater surfaces". Session presider. Virtual
Apr 2021

Leicester University Invited Seminar

Seminar entitled "Alignment and Imaging of Molecular Complexes inside Helium Droplets" Leicester, UK
Feb 2018

Spectroscopy and Dynamics Group Meeting

Talk entitled 'Coulomb Explosion Imaging of Molecular Dimers inside Helium Droplets'. Durham, UK
Jan 2018

Secondments & External Experiments

Spring-8 Angstrom Compact Free Electron Laser

FEL Experiment Hyogo, Japan
Feb 2019

University of Leicester

Academic Secondment Leicester, UK
Jan 2018 - Mar 2018

VENTEON Laser Quantum

Industrial Secondment Hannover, DE
Nov 2017 - Dec 2017

Computer Skills

Programming Languages: Python, Fortran, Lua (advanced), MATLAB, LabVIEW, BASH (competent).

Software Packages: Autodesk Inventor, SIMION, ChemDraw, L^AT_EX, MS Office

Languages

English: Fluent (Native Language)

Danish: Highly Proficient (B2)

Publications

Books

Ultrafast Lasers and Optics for Experimentalists

May 2021

J. D. Pickering. IOP Publishing.

Journal Papers - *h*-index: 5

Multi-channel photodissociation and XUV-induced charge transfer dynamics in strong-field-ionized methyl iodide studied with time-resolved recoil-frame covariance imaging

May 2021

F. Allum, et al. (including J. D. Pickering). Faraday Discussions 228, 571-596.

Alignment of the CS₂ Dimer Embedded in Helium Droplets Induced by a Circularly Polarised Laser Pulse

Apr 2019

J. D. Pickering, et al. Physical Review A 99. 043403.

Femtosecond Laser Induced Coulomb Explosion Imaging of Aligned OCS Oligomers inside Helium Droplets

Sep 2018

J. D. Pickering, et al. The Journal of Chemical Physics 149, 154306. Editor's Pick.

Alignment and Imaging of a CS₂ Dimer Inside Helium Nanodroplets

March 2018

J. D. Pickering, et al. Physical Review Letters 120, 113202.

Gas-phase Structural Isomer Identification using Recoil-frame Covariance Imaging

March 2018

M. Burt, et al. (including J. D. Pickering). The Journal of Chemical Physics 148, 091102.

Dissociation of Multiply Charged ICN by Coulomb Explosion

July 2016

J. H. D. Eland, et al. (including J. D. Pickering). The Journal of Chemical Physics 145, 074303.

Three-fold Covariance Imaging of Laser Induced Coulomb Explosions

April 2016

J. D. Pickering, et al. The Journal of Chemical Physics 144, 161105.

In Review

Laser-induced Coulomb explosion imaging of aligned molecules and molecular dimers.

In Review

C. A. Schouder, et al (including J. D. Pickering). Annual Review of Physical Chemistry

A liquid surface height controller for sum-frequency generation spectroscopy.

In Review

J. D. Pickering, et al. Review of Scientific Instruments.