

Dear 1st year Teddy Hall Materials Students,

Welcome to Teddy Hall, and to Materials at Oxford!

In Michaelmas term you will have tutorials in the following topics: Thermodynamics and Microstructure with Prof. Katharina Marquardt, Crystallography with Prof Sergio Lozano-Perez, and Mechanical Properties with me. We'll confirm your tutor for Maths closer to the start of term

Your first tutorial will be me during the first week of term (date and time tbc.). For this you will need to bring answers to the following estimation questions. How you obtain the answer is just as important as the answer itself. Quote results to the nearest power of 10.

Estimation is a key skill for a scientist to develop. It is a first step before doing a more detailed calculation, and also provides a sanity check for any numerical answer you get. None of these questions needs more than 10 lines working. If you find yourself writing more than this you are working too hard! In the tutorial we will expect you to justify your answers.

- (a) Number of atoms in a pencil full stop (i.e. the dot or period at the end of sentence!)
- (b) Mass of Ben-Nevis (kg)
- (c) How many kittens were born in Oxford last year?
- (d) How many electrons are there on the earth?
- (e) How much does it cost to leave a light on for a year?
- (f) How many blades of grass on the lawn in the front quad of Teddy Hall?

Jonathan Yates
Tutor for Materials
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St Edmund Hall

Materials Science 2024-2025

Undergraduates

Email addresses are of the form firstname.lastname@seh.ox.ac.uk

Fellows

Teaching Fellows

Prof. Sergio Lozano-Perez
Dr Joseph Prentice
Prof. Katharina Marquardt
Prof. Jonathan Yates

George Kelley Senior Research Fellow
Early Career Fellow
Tutor
Tutor

Other Materials Fellows

Prof. Sir Peter Bruce, FRS
Prof. Sir Peter Hirsch, FRS
Prof. Steve Roberts

Isaac Wolfson Professor of Metallurgy
Isaac Wolfson Professor of Metallurgy (1966-1992)
Professor of Materials, Tutor 2002-2014

Professorial and Emeritus Fellows are not directly involved in undergraduate teaching for the college, but they do play a role in the life of the college and you may meet them at various events, or in the department.

College Lecturers

Prof. Rebecca Nicholls, Ben Jagger

Organising Tutor

Jonathan Yates and Katharina Marquardt are the college tutors in Materials. They are responsible for arranging tutorials, collections, and reading of reports. They are also the first contact for questions about the course, requests for references etc.

Offices and Telephones

Prof Jonathan Yates	15 Parks Road	(6)12797
Materials Teaching Room	Mingos B	(2)47170

A note on telephone numbers using JRY as an example: 12797 works from an internal, university phone and 612797 from a landline within Oxford. From outside of Oxford, or from a mobile, use 01865 612797.

We suggest that you store these numbers in your mobile phone. It is also a good idea to swap numbers with the rest of your year group. This makes any last minute rearrangement of tutorials much easier.

Collections

Collections are exams usually sat in college at the start of a term. Their purpose is to help you prepare for the end of year University exams. The schedule of collections is:

1st years:	Start of Hilary and Trinity Terms
2nd years:	Start of Hilary and Trinity Terms
3rd Years:	Start of Michaelmas Term

Library

The college library aims to keep copies of the key books required for the courses taken in the first two years (and indeed has many of the books required for the 3rd year option courses). As Materials is a multidisciplinary subject relevant books will be found in the Physics, Chemistry, Engineering and Mathematics sections, as well as the dedicated Materials section. Copies of certain titles may be found in more than one section. Use of the library catalogue is advised. Suggestions for purchases, either new titles or additional copies of existing titles, are very welcome. Please pass these to one of the tutors.

History of Metallurgy and Materials Science at St Edmund Hall

Amongst the Oxford colleges St Edmund Hall has the longest and most distinguished association with Materials Science. William Hume-Rothery (b. 1899 d. 1968) was appointed as a fellow of the college in 1958 on becoming the first Isaac Wolfson Professor of Metallurgy. The Professorship was named after Sir Isaac Wolfson, a noted Philanthropist who also gives his name to our new dining hall, and to colleges in both Oxford and Cambridge. The Wolfson Chair is permanently associated with the Hall. Hume-Rothery worked in many areas of Metallurgy in particular he obtained rules concerning the formation of solid solutions. His successor to the Wolfson chair was Sir Peter Hirsch, one of the pioneers of transmission electron microscopy. The immediate past holder was David Pettifor whose research was in the quantum mechanical modelling of Materials. The current Wolfson Chair is Peter Bruce, whose research is in the area of ionic-conductors for battery applications. Jack Christian (b. 1922 d. 2001) was a professorial fellow at the Hall from 1963 and made contributions to many areas of Materials science, particularly in the field of martensitic transformations of metals and alloys. John Hunt was tutor from 1965 to 2003 and carried out seminal experimental and theoretical work on the solidification of materials. It is a rare distinction that six of the Hall's fellows in Materials have been elected fellows of the Royal Society (Hume-Rothery, Hirsch, Christian, Hunt, Pettifor, Bruce).

Materials has always been one of the college's top performing subjects with a high proportion of students obtaining first class degrees and many being awarded University prizes. In recent years a significant proportion of our students have undertaken graduate studies, both in this country and the USA. Other destinations have included industry, education and the city. The Hall's Materials alumni occupy many leading roles in academia, industry and public life.

1st Year

Michaelmas Term

P1 Crystalline Materials by Diffraction SLP

P2 Elastic Deformation JRY

P2 Structure of Glassy Materials SLP/JRY

P3 Thermodynamics KM

P3 Microstructure of Materials I KM

Maths - Department

Hilary Term

P1 Electromagnetic Properties JRY

P1 Random Processes JP

P1 Quantum Mechanics RJN

P2 Defects in Crystals KM

P3 Electrochemistry KM

Maths - Department

Trinity Term

P2 Mechanical Properties JA

P3 Microstructure of Materials II KM

P3 Nanomaterials RJN

KM Katharina Marquardt

JRY Jonathan Yates

JP Joseph Prentice

JRY Jonathan Yates

RJN Rebecca Nicholls

SLP Sergio Lozano-Perez

JA Jack Aspinall