



MAGIC OF MATERIALS

St Paul's School, London. 8 to 10 July 2019

Information and application form



Organised and run in partnership between St Paul's School and the Institute of Materials, Minerals and Mining

MAGIC OF MATERIALS

A FREE three day residential summer school introducing pupils aged 14-15 to Materials Science and Engineering • St Paul's School, London • 8 to 10 July 2019



The **Magic of Materials** summer school is a **FREE** three day residential course for pupils aged 14-15 (at the end of year 10 or equivalent) that is being run at St Paul's School in London.

The course is organised and run in partnership between St Paul's School and the Institute of Materials, Minerals and Mining (IOM3) to bring the subject of materials science and engineering to life, show how materials have made a difference to the way we live our lives and highlight the broad range of exciting careers available in the field.

The course will comprise of talks, lectures, question and answer sessions and importantly, hands-on experiments (some that they may never meet at school, and some that they will definitely not meet at school!). The sessions will be led by experts from academia and industry and school staff and the delegates will be supported by and an enthusiastic, knowledgeable and dedicated group of Materials Magicians (sixth formers from St Paul's.) Evenings will be informal but involve challenges, and a chance to explore unusual materials.

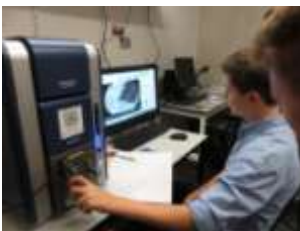
The residential aspect will give the students time to absorb the information, get to know other people from across the country and be part of an academic 'conference' environment.

Delegates will stay in the school's boarding house with a full pastoral care package and all meals and refreshments are included.

This unique conference is open to 24 state school pupils from across the UK and the course is **free** to attend. A maximum of two pupils from any one school may attend and places will be allocated on the basis of a simple application form requiring a short statement from both pupils and teachers. We would encourage pupils with a keen interest in STEM that may not be the highest flyers, to apply. All attendees will receive membership of IOM3 for three years following the course.

Funding

In order to encourage pupils from disadvantaged backgrounds and underrepresented groups to attend we are able to offer travel bursaries of up to £100. If you would like to apply please complete the relevant section of the form.



Course Overview and Provisional Timetable

All of the sessions have been designed to add breadth and depth to the learners' existing knowledge and showcase how they might make a difference to the materials world in the future.

Lectures will be delivered to the whole group but the practical sessions will be in small groups.

Day 1

Delegates are welcome to arrive anytime after 1100 when drinks and snacks will be available before the start of the first session. You will have a chance to meet your group and the Materials Magicians at lunchtime

- 1100 Arrive
- 1130 Welcome and introductions
- 1145 **Materials in Action**
- 1300 Lunch
- 1345 Introduction to Crest Award project
- 1400 **Characterising properties**
- 1445 Break
- 1500 Tensile testing / Modelling properties
- 1545 Tensile testing / Modelling properties
- 1630 Walk to boarding house
- 1700 Safety briefing in common room
- 1730 Dinner
- 1830 Pizza box challenge
- 2000 Free time
- 2200 Lights out

Day 2

- 0800 Breakfast
- 0900 Introduction to Day 2
- 0915 **Characterising structure**
- 1000 Electron / optical microscopy
- 1045 Break
- 1100 Optical / electron microscopy
- 1145 Careers and speed networking
- 1300 Lunch
- 1330 **Introduction to Metals**
- 1415 Break
- 1425 **Introduction to Composites**
- 1510 Break
- 1520 Metals / composites
- 1605 Metals / composites
- 1650 Crest award project development
- 1700 Back to boarding house & free time
- 1800 BBQ and ice cream making
- 2000 Free time
- 2200 Lights out

Day 3

- 0800 Breakfast
- 0900 Introduction to Day 3
- 0915 **Introduction to Ceramics**
- 1000 Break
- 1010 **Introduction to Polymers**
- 1055 Break
- 1105 Ceramics / Polymers
- 1150 Ceramics / Polymers
- 1235 Lunch
- 1300 Testing and awards
- 1400 Feedback and Crest project
- 1500 Course closes and depart

Lectures are shown in red and practical sessions in dark grey.

Delegates all receive a comprehensive pack on arrival containing everything they will need to guide them through each of the sessions on the course.

We have worked closely with the British Science Association so that students attending may complete a project to earn them a Bronze Crest Award. The delegate pack also contains a detailed work book to help them with their project.

Schools sending delegates on the course will receive free membership of the IOM3 Schools Affiliate Scheme

(www.iom3.org/sas)



Accommodation

The delegates will be staying in the school's on-site boarding house which comprises of single bedrooms and shared bathrooms. Boys and girls will be accommodated on different floors and both male and female staff will be resident in the boarding house for pastoral care outside of the formal teaching. These staff members are heavily involved in running the course so any children with issues or concerns will have a familiar face to approach at any time of the day. All meals and refreshments will be served on-site and special dietary requirements can be catered for if notified in advance.

There is the expectation that behaviour is appropriate to the residential course and students may be required to leave in the event of unacceptable behaviour.

What to bring

Participants will need to bring enough clothes to last the duration of the three day course. Clothing must be suitable for work in a school laboratory and footwear should enclose the feet – no open toed shoes, sandals or flip-flops! Any specific safety wear, such as lab coats, will be provided where necessary.

Participants should also bring toiletries and a towel. Duvets, pillows and bedding will be provided.

We recommend that participants DO NOT bring electronic devices, such as tablets and games consoles, on the course as there will be little time for them to be enjoyed. If students bring along a mobile phone they are responsible for looking after it and keeping it safe. The organisers will not be liable for items lost or damage during the course.

All information, materials and handouts will be provided on arrival.

Directions

St Paul's School can be found along Lonsdale Road in Barnes, West London, SW13 9JT. The closest tube is Hammersmith and it takes approximately 20 minutes to walk, this is closer than the nearest over ground station. Maps can be found at <http://www.stpaulsschool.org.uk/facilities/location>

Parking is available on site for drop off and pick up.

Participants will be directed to the registration point where they can drop off their bags before the first lecture.



Dr Diane Aston
Diane.Aston@iom3.org



About us

The Institute of Materials, Minerals and Mining

(www.iom3.org)

The Institute of Materials, Minerals and Mining is a major UK engineering institution whose activities encompass the whole materials cycle, from exploration and extraction, through characterisation, processing, forming, finishing and application, to product recycling and land reuse. It exists to promote and develop all aspects of materials science and engineering, geology, mining and associated technologies, mineral and petroleum engineering and extraction metallurgy, as a leading authority in the worldwide materials and mining community.

The Institute has a long and successful history of working with UK schools to support the teaching of the materials topics and promote careers in these areas. The Schools Affiliate Scheme now supports over 1200 science and design technology teachers from around the UK and through this over 78,000 young people have had the chance to find out about materials first-hand through interactive lectures and other activities.

St Paul's School, London

(www.stpaulsschool.org.uk)

St Paul's School is an independent school for boys aged 13 to 18, founded in 1509 and located just south of the River Thames in London. The School has recently opened a new science block; each floor is purpose built and specially resourced to deliver one of the three curriculum sciences. The Physics department benefits from a dedicated research lab that can act as a hub for school-age researchers. The school has recently invested in a state-of-the-art table top scanning electron microscope (SEM) with x-ray characterisation for pupils to use in their studies.

Over the past three years the school has been running highly successful outreach programs in biology, chemistry and materials science where sixth form students deliver exciting materials science-related activities. Many of the experiments on the conference have been tried and tested during these sessions.

It is hoped that the pupils attending the conference and their schools will continue to build a relationship with St Paul's so that they can use the facilities, such as the SEM and research hub, and get involved with the National Centre for Science and Engineering Research in Schools Characterisation Hub.

For office use only			
Name		Application number	MOM18-
Received & confirmation sent		Bursary?	
Successful	Unsuccessful	Waiting list	Cancelled
Notification to school			

MAGIC OF MATERIALS SUMMER SCHOOL APPLICATION FORM

Please complete all of the boxes on the following pages as fully as you can, this will help us to process your application quickly. You are welcome to complete the form on the computer or print and fill it in by hand, but if this is the case please ensure that your entries are legible!

A maximum of two delegates will be selected from any one school, though you may submit as many applications as you see fit. Please post your completed application form(s) to Dr Diane Aston, Magic of Materials, IOM3, The Boilerhouse, Caunt Road, Grantham, NG31 7FZ.

The deadline for submission of applications is **1700hs on Friday 07 June 2019**, applications received after this date will not be considered. All applicants will be notified as to whether or not they have been successful by **Friday 14 June**. This will be confirmed via the nominating teacher.

If a pupil has been successful in obtaining a place but is no longer able to attend for any reason please let us know as soon as possible so that the place can be offered to someone else.

Please include this cover sheet with your application and make sure that everyone has signed the declaration on the final page.

We think we have included everything here but if you have any questions please contact Dr Diane Aston (diane.aston@iom3.org)

DATA PROTECTION AND PRIVACY

- The information supplied in this form will be used by Dr Diane Aston at IOM3 and Janet Mee at St Paul's School for the purposes of administering the course.
- Pupil information, including home address, will be used by the Institute to process the free membership following the course. **PUPILS:** Please tick here if you do not wish to take up the offer of free IOM3 membership for three years:
- Teacher information will be used by the Institute to process the free Schools Affiliate membership. **TEACHERS:** Please tick here if you do not wish to take up the offer of free Schools Affiliate Scheme membership.
- Personal information relating to IOM3 and Schools Affiliate Scheme membership will be stored and used in line with the Institute's Privacy Notice (please see www.iom3.org)

About the applicant (to be completed by the pupil)

First name		Surname	
Gender		Date of birth	
Home address (including postcode)			
Email			
Please tell us in no more than 150 words why you would like to attend the Magic of Materials Summer School. You could tell us why you are interested in materials, describe any other experiences you have had and perhaps what sort of career you would like to go into. This is your chance to show us why we should choose you!			
Do you have any special dietary requirements? (If yes, please detail below)		YES / NO	
Do you have any other specific special requirements? (If yes, please detail below)		YES / NO	
Two emergency contacts (include full name, phone number and relationship to you)			
1.			
2.			

About the applicant's school (to be completed by a teacher)

Full name of nominating teacher			
Position		Department	
School			
Address (inc. postcode)			
Phone		Email	
Please tell us in no more than 100 words why this pupil should attend the Magic of Materials Summer School.			

Travel Bursary

We wish to apply for a travel bursary of up to £100	YES / NO
Is this pupil eligible for Free school meals / pupil premium funding (this is not necessary but we would like to know for data gathering purposes)	YES / NO
Please tell us how much it will cost for the pupil to travel to and from the course by car or train (standard class)	

Declaration (please circle to confirm the following)

We understand that this course takes place during term time and the necessary permissions for a residential course have been sought and approved by the school. YES / NO

We confirm that photographs or video clips of the applicant may be used by St Paul's School and the Institute of Materials, Minerals and Mining for future publicity purposes. YES / NO

We understand that the applicant will be attending the course for academic and scholarly purposes and that any behaviour deemed unacceptable may result in the participant being required to leave the course. This will result in the deposit being withheld. YES / NO

We confirm that all the details supplied are correct to the best of our knowledge YES / NO

We understand that the organisers (St Paul's School and IOM3) will not be responsible or liable for the loss or damage of personal property during the course YES / NO

Signature of nominating teacher

Signature of parent / guardian

Signature of pupil

Please send the completed application form to **Dr Diane Aston, Magic of Materials, IOM3, The Boilerhouse, Caunt Road, Grantham, NG31 7FZ.** The closing date for registrations is Friday 07 June 2019. All applicants will be notified as to whether they have been successful or not by 14 June.

-----Application form ends-----