### Event Details

**Venue:** Hume Rothery Lecture Theatre  
Refreshments will be served in the Hume Rothery Building Reception Foyer from 3:30 p.m.

### Colloquium Overview

**Week** | **Date** | **Colloquium Title and Abstract** | **Host:**
---|---|---|---
1 | Thursday, 17 January | **Dr Katharina Marquardt**, Imperial College, London  
**Grain boundary plans in materials of the Earth’s mantle**  
There is growing evidence that the character distribution of interfaces in rocks influence macroscopic properties and processes in the Earth mantle. To date, neither the anisotropic frequency distribution of grain boundaries nor if the grain boundaries distributions are dependent on chemical composition or deformation is known. In the presented study we aim at linking interfacial structures to properties. Additionally, we follow the evolution of the distribution of interfacial area with increasing strain in a torsion deformed sample.  
We synthesized different olivine aggregates with varying chemical compositions ranging from Mg$_2$SiO$_4$ forsterite to Mg$_{1.0}$Fe$_{1.0}$SiO$_4$ olivine and varied the content of trace elements. We characterized these samples using mainly electron backscatter diffraction (EBSD) and transmission electron microscopy (TEM).  
We will discuss the influence of composition and deformation on the GBPD and possible mechanisms of response of grain boundaries to dislocation movement.  
**Short Bio**  
Katharina Marquardt is a Lecturer in Ceramics at the Department of Materials since the end of 2018. Prior to moving to Imperial she worked at the University of Bayreuth at the Bayerisches Geoinstitut. She obtained her doctorate from the Technical University Berlin for a collaborative effort with the GeoForschungsZentrum Potsdam. As visiting researcher, she spent time at the National Centre for Electron Microscopy Berkeley, USA, at the SuperSTEM in Daresbury, UK and at the Carnegie Mellon University of Pittsburgh in the department of Materials Science and Engineering. There she collaboratively investigated the grain boundary character distribution (GBCD) of Mg$_2$SiO$_4$, which is the first study of the GBCD in orthorhombic crystal system.  

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<td>3</td>
<td>Thursday, 31 January</td>
<td>Generally, KMs research is marked by a strong cross-disciplinary character and focuses on the structural and chemical characterization of defects in ceramics/minerals and their relation to their materials macroscopic properties, such as for example element transport and storage, which is equally relevant to Earth and materials sciences. Nm-scale processes control not only the formation of nearly everything in our directly accessible world, but also the dynamics of the deep Earth's interior.</td>
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| 4    | Thursday, 14 February | **Dr Kate Black**, University of Liverpool  
**Broadening the materials pallet for Additive Manufacturing**  
One of the main challenges in the field of AM is the limited pallet of materials we have available to us. While it is currently possible to create industrial AM products out of metals and plastics, the range of materials is still limited and needs expanding and optimising. One way of expanding these materials is to employ an inter-disciplinary approach whereby we combine methodologies from the world of chemistry and material science to develop a series of novel reactive starting materials. This talk will explore the use of Reactive Organometallic (ROM) precursors to produce materials spanning metals, oxides and nitrides, which can be processed to print novel functional 2D and 3D materials. | -- |
| 8    | Thursday, 7 March    | **Tony Paxton**, [ ]  
**Title**  
Abstract | AJW |