



Course Title:	<i>CRYSTAL DEFECTS</i>
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CONTACT INFORMATION	
Course Leader	<i>Bill Clegg</i>
COURSE DETAILS	
Level	<i>Masters</i>
Pre-requisites	<i>None</i>
Linked courses	<i>None</i>
Credits	<i>10 (for Swansea and Birmingham)</i>
Total student effort	<i>100 h approx</i>
Delivery	<i>Preliminary reading, interactive lectures and classes</i>
Assessment method(s)	<i>Written exercises during and after delivery</i>
Resources needed	<i>Sufficient computers for those taking the course</i>
Texts	<i>Deformation Kinetics, Krausz & Eyring</i>

Course Description: ~150 Words

Briefly describe areas covered indicating depth of coverage

This course aims to give an understanding of the role of crystal defects (dislocations, stacking faults and cracks) on in determining the plasticity and toughness of ultra-high temperature materials and alloys over a wide range of temperature. The approach is to understand the underlying principles involved and to demonstrate these with exercises and specific examples.

Teaching will be by interactive lectures and supervised exercises in the afternoons.

1. Understand the origins of the resistance to dislocation motion in hard materials.
2. Comparison with what is normally seen in close-packed metals.
3. How plasticity can influence toughness
4. The importance of structure on toughness.

Learning Outcomes: Max 50 words

On completion the student should be able to:

1. Estimate the resistance to dislocation motion in hard materials.
2. Understand how this might be modified by the introduction of stacking faults of various types.
3. Understand how this can be modified by crystal structure.
4. Understand how toughness is limited by plasticity and how this can be modified by structure.