

Nanomaterials, Synthesis Processing and Applications. SoSe 2019

Overview

Materials with geometries in nanoscopic dimensions exhibit unusual properties that differ fundamentally from those of the bulk material. Such materials have undergone fascinating developments in recent years. In this course we will gain new understandings into the origins of the properties of nanomaterials and examine the various methods to synthesise such materials.

Lectures will take place on Wednesdays at 12:00.

Please note that no lecture will take place on week 2 (17 April)

Syllabus

The course will address diverse topics including the following:

The history and development of nanomaterials	Electronic and magnetic properties
The significance of surfaces	Optical properties
Bottom-up synthesis methods	Nanomaterials for biomedical applications
Top-down synthesis methods	Nanomaterials for automotive applications
Mechanical properties of nanomaterials	

Learning Outcomes

- Understand concepts of nanomaterials, nanoscience and nanotechnology
- Understand the role of scale and surface energy in material behaviour
- Calculate surface energy of crystallographic planes
- Gain new insights into the synthesis of nanoscale structures
- Explain scale dependant properties of nanomaterials
- Acquire knowledge relating to applications of nanomaterials
- Describe differences between nanomaterials of different forms

Assessment

50% Presentation, 50% Oral examination

Presentation topics to be selected by students during week 2 of semester!

Access to the ISIS elearning platform:

Students are requested to enrol for the ISIS interface of this course using the key:
nanomat2019

Contact

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