

Research @ ETC

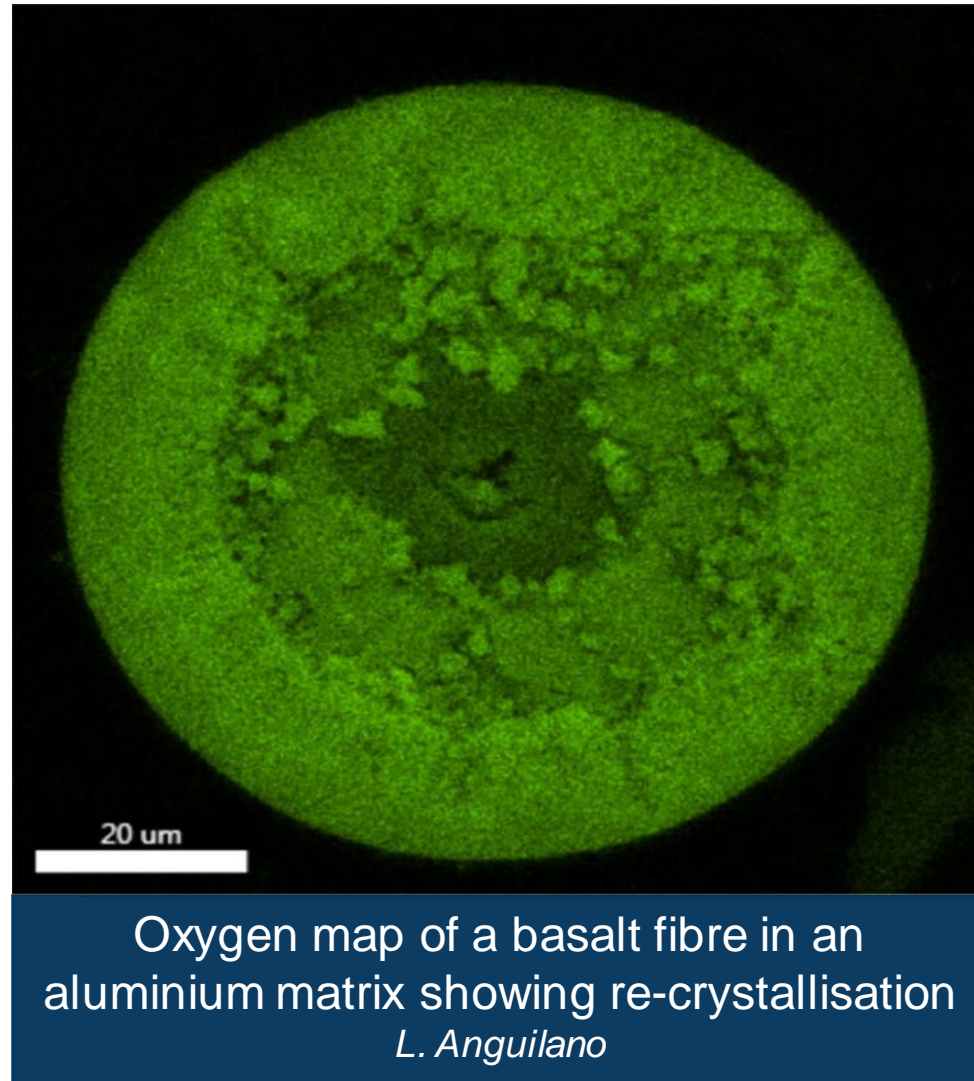
<http://www.brunel.ac.uk/etc>

Materials Characterisation and Development

Novel composites

We use our suite of characterisation techniques to characterise novel composites in order to offer insight in the manufacturing condition optimisations and in fundamental understanding of material behaviour within a fully multi-disciplinary approach.

(L. Anguilano; B McKay; J. Campbell; K. Tarverdi)

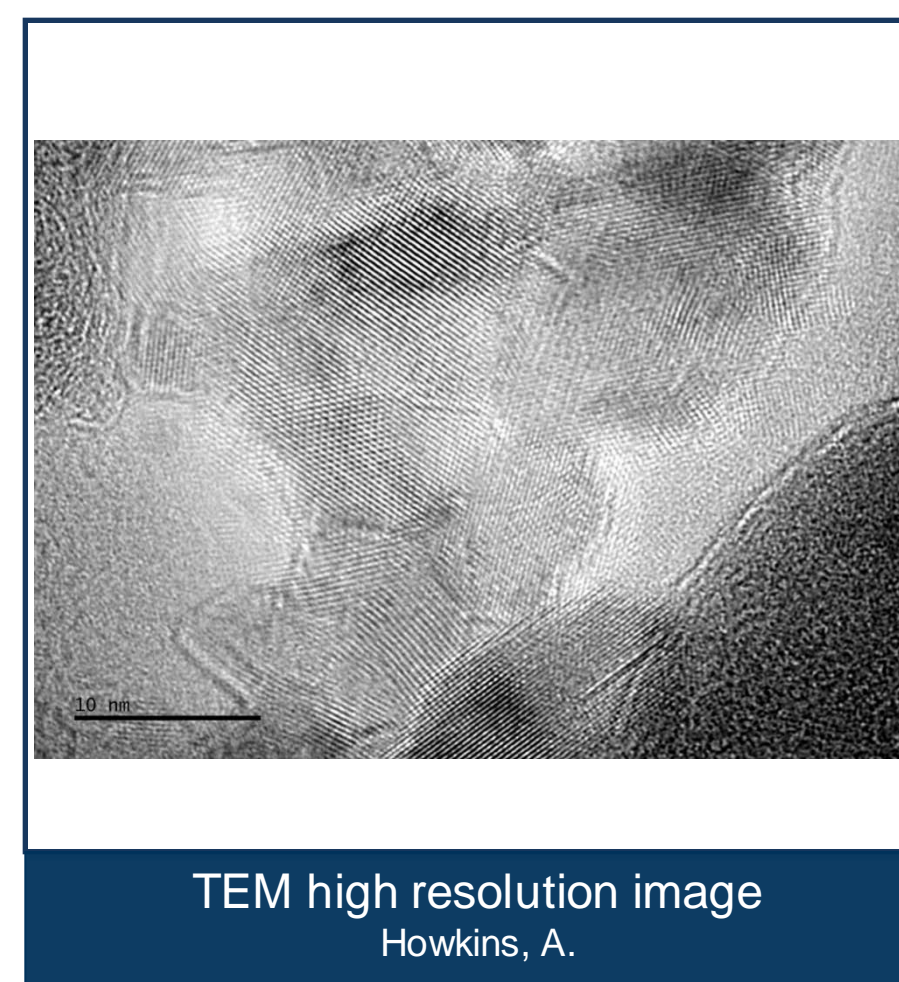


Oxygen map of a basalt fibre in an aluminium matrix showing re-crystallisation
L. Anguilano

Nano-materials

Nano-engineering of material has a wide application in displaying and light application, as well as for material functionalisation and property enhancement purposes. Our state of the art TEM is capable of imaging at a high resolution. It is equipped with X-ray, electron energy filtering, electron energy loss spectrometry, and cathodoluminescence.

(A. Howkins; G. Fern)

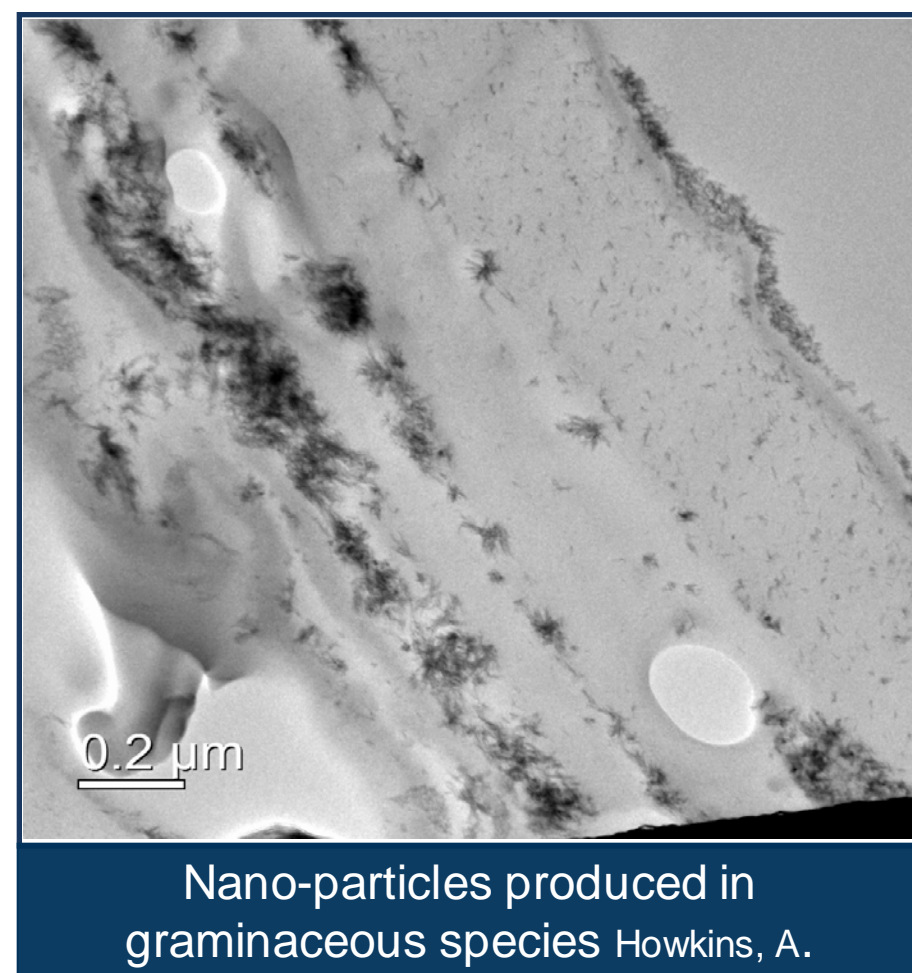


TEM high resolution image
Howkins, A.

Nano-synthesis

Highly sustainable methods for synthesis of nano-particles are being developed at the ETC and at Brunel University overall and investigated with the powerful TEM and SEM facilities available at the ETC.

(A. Reynolds, P. Sermon)

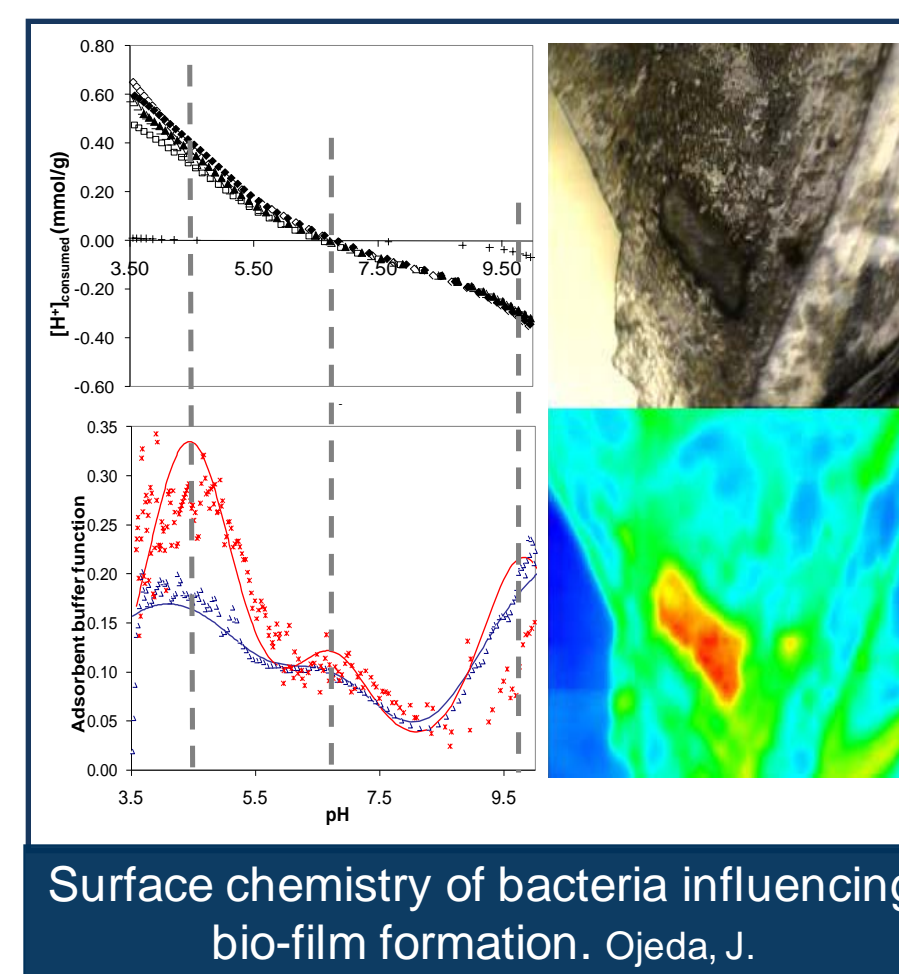


Nano-particles produced in graminaceous species
Howkins, A.

Micro-plastics

A protocol for the investigation of micro-plastic in water was developed by J.J. Ojeda at the ETC. The ETC is now continuing in carrying out investigation of micro-plastic in different media.

(S. Haghani; S. Jobling)



Surface chemistry of bacteria influencing bio-film formation.
Ojeda, J.

Environmental impacts

The ETC looks both at human and environmental impact. We are interested in heavy metals in biological tissue as well as in soils. Through phytoremediation and phytomining studies we aim at achieve a large impact in raw material sourcing.

(A. Reynolds; L. Anguilano)

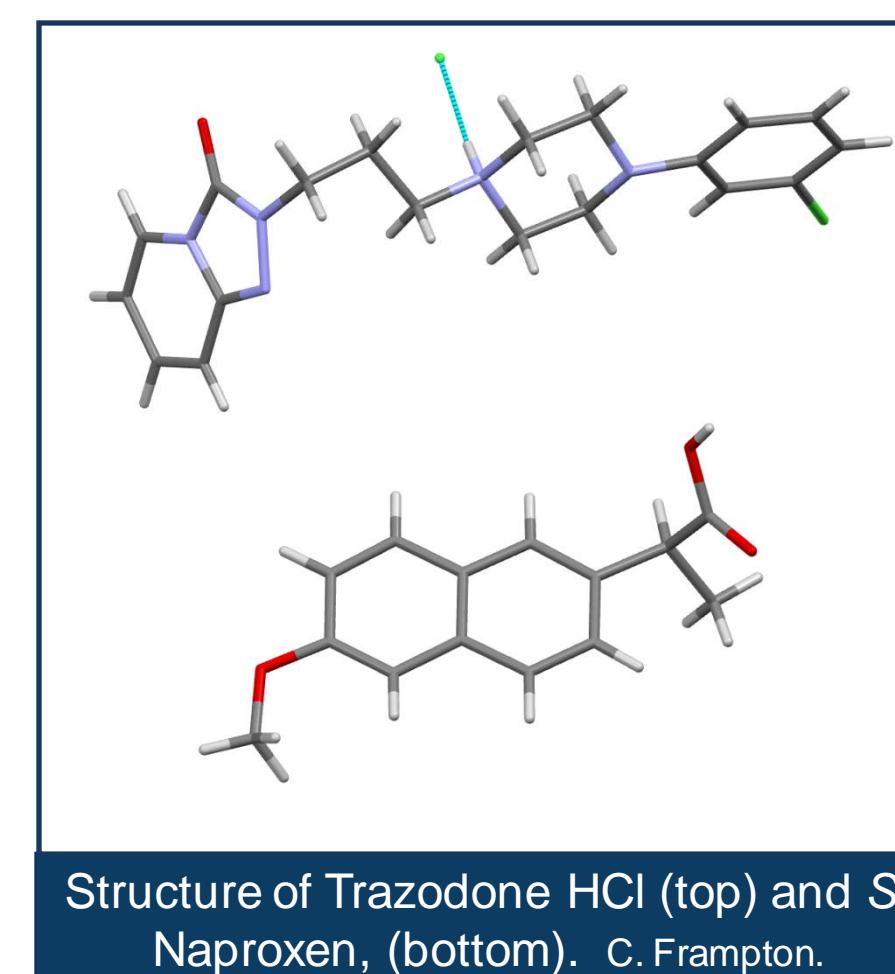


SEM image of *B. Subtilis* after exposure to silver nanoparticles.
Reynolds, A., Ojeda, L.

Pharmaceutics

Determination of absolute stereochemistry and definition of salt and cocrystal states is made possible through the expert use of our state of the art single crystal X-ray diffraction facility. Controlled temperature and pressure environments are also available.

(S. Haghani; C. Frampton)



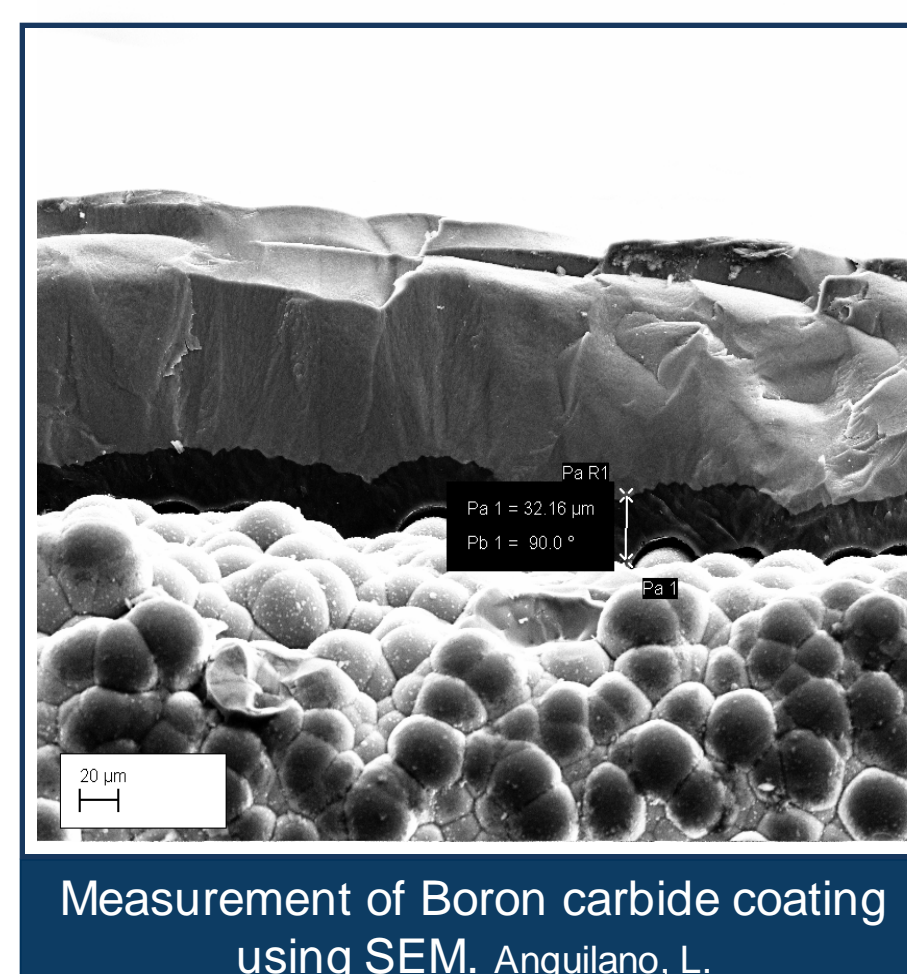
Structure of Trazodone HCl (top) and S-Naproxen, (bottom).
C. Frampton.

Functional Materials

Thin films and nano-structures

Growth and processing of materials, including oxides, diamond-like carbon, composites, nanotubes, nano-particles and nanostructures using a variety of techniques: Plasma deposition, photo-deposition and laser machining.

(N. Nelson; T. Anson; I. Boyd)



Measurement of Boron carbide coating using SEM.
Anguilano, L.

Biomedical Engineering

- Application of smart materials for medical devices
- Applying electrically polarised field on cells and proteins
- Biomedical material interfaces and biological species

(N. Nelson; T. Anson)



DLC coated total knee prostheses to prevent metal ion migration, in vivo.
Anson, T.