



HARROW & HILLINGDON GEOLOGICAL SOCIETY

A Local Group of the Geologists' Association

Founded 1973

www.hhgs.org.uk

Twitter @HHGeolSoc

contact@hhgs.org.uk

2024 Geo-futures

A series of talks showcasing advances in the research and practice of geology.

Wednesday 14th February 2024 at 8pm on Zoom

Lorna's Seeds Urban Mining Project: Phytomining of nanoparticles

Dr Lorna Anguilano, Brunel University



Most human activities release metal particles into the environment. Trains on tracks, cars braking, planes on runways all liberate metal particles into our environment and eventually end up in our soil. Soil metal contamination is a problem not only near mining or industrial sites, but also in many urban areas.

Using a combination of seeds, we can 'mine' these metals from our gardens and allotments. Collecting them from the soil is a more sustainable manner of mining than some traditional methods. Some metals are often available in limited quantities, and when needed, are mined under terrible conditions, further impacting our environment. By taking the metals from soil, both our environment and our soil will be cleaner.

Dr Lorna Anguilano is leading a team at Brunel University London to develop technology to use plants which accumulate metals to clean polluted land and also garden and allotment soils. The aim is to remove metals from the soil and develop a process for their re-use, improving soil quality and creating a new sustainable resource of these metals. Soil samples taken around Brunel University London were found to contain metals such as chromium, iron, nickel, copper, and lead. Although these metals are below official hazardous limits, their continuous accumulation is not desirable.



HARROW & HILLINGDON GEOLOGICAL SOCIETY

A Local Group of the Geologists' Association

Founded 1973

www.hhgs.org.uk

Twitter @HHGeolSoc

contact@hhgs.org.uk

Dr Lorna Anguilano is a Senior Research Fellow, Quality Manager of the Experimental Techniques Centre and the Assistant Director of the Wolfson Centre for Sustainable materials development and Processing.



Lorna's background is in applied mineralogy with a PhD in Archaeometallurgy and a wide experience of material characterisation through X-Ray Diffraction, X-Ray Fluorescence, Scanning Electron Microscopy and Electron Back-Scattering Diffraction. Her research interests are focused on the upcycling of waste and contaminants for the manufacturing of high value product particularly for the energy and food industry. In collaboration with industrial partners Lorna's activities are directed at identifying low energy routes for the manufacturing of composites and nanoparticles from materials such as aluminium swarfs, metal contaminants in soils, recycled plastic. Optimised manufacturing conditions are developed and materials with unique characteristics are generated.

In parallel Lorna carries out archaeometallurgical studies to understand the socio-economic factors driving the technological changes in the past.