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BartingtonNews

MS used for evaluating soil pollution

Recently published research by Loughborough University shows magnetic susceptibility (MS) measurement to be a simple, reliable and rapid technique for evaluating levels of pollution in urban soil contamination.

Soil pollution can be analysed through techniques such as X-ray Fluorescence (XRF) spectrometry and Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS), but these are time consuming and expensive. The Bartington MS2 meter and MS2B sensor used by the researchers are considerably cheaper than the specialised equipment needed, and much more portable.

The researchers, Loughborough s Chris Crosby and colleagues, gathered samples from the Wolverhampton ringroad and the Birmingham Mainline canal, which were subjected to MS evaluation and also geochemical analysis using XRF. The results showed a link between MS measurements and the geochemical analysis, particularly with levels of Fe, Cu, Zn and Pb. Further analysis was able to suggest where an increased concentration of metals was caused by human activity.

The research highlights the usefulness of magnetic susceptibility as a means to characterise urban soil pollution, in an economic, fast and reliable manner.

C. J. Crosby, M. A. Fullen & C. A. Booth (2014) Potential linkages between mineral magnetic measurements and urban roadside soil pollution (part 2), Environmental Science Processes & Impacts, 16, 548-557.
C.J. Crosby, C.A. Booth, D. Appasamy, M.A. Fullen & K. Farr (2014) Mineral magnetic measurements as a pollution proxy for canal sediments (Birmingham Canal Navigation Main Line), Environmental Technology, 35:4, 432-445.

Gradiometry uncovers ancient Kent settlements

An archaeological project supported by Bartington Instruments to investigate the development of Kent during Iron Age, Roman and Saxon times has been highly successful.

The Canterbury Hinterland project, a joint university project directed by Cambridge s Dr Lacey Wallace and Oxford s Dr Alex Mullen, reports that it uncovered numerous features beneath the land surface that greatly expand our understanding of the development of rural settlements around Canterbury.

The project used magnetometry to survey more than 33.5 hectares (33,5000m^2) in 540 grids across four sites. Iron Age and Roman enclosures were detected; an Anglo-Saxon cemetery was mapped; a suspected Romano-Celtic temple identi ed; and, most unexpected of all, a planned complex of enclosures and structures with de ned streets was discovered. The latter includes a large building measuring about 42x18m, with an outer and an inner wall and a line of columns running down the middle, and also large rectilinear areas that could be sunken basements or pools.

Bartington Instruments has supported the project with the provision of a Grad601 gradiometer. Magnetometry proved a useful, non-invasive technique for detecting features hidden to the naked eye, suitable for all kinds of weather and ground type, and complementing other methods such as ground penetrating radar to build up a full picture of the sites.

More exible surveys with data logger upgrade

An upgrade to the DL601 Data Logger gives Grad601 users the ability to choose between survey modes from the main menu.

Previously the data logger had to be factory set to either Grid or NMEA mode. Grid mode saves survey data in prede ned grids that must be downloaded at the end of the survey; in NMEA mode, data is sent through to a PC in real time using NMEA format. It is then associated with location information to produce a reliable map of the survey site regardless of the surveyor s course.

Previous data logger versions can be upgraded if the unit is returned to Bartington Instruments.