

Research Topics in Forensic, Environmental and Analytical Chemistry

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This short course aims to cover topics in applied science which are important to subjects related to analytical science. The contents include an introduction to chiral chromatography applied in analytical chemistry and some of the important classes of stationary phases available, for example in liquid and gas chromatography. Some illustrative compounds will be shown, including discussion of method development using drugs and pollutants as examples.

Some research topics in forensic chemistry which merit discussion include fire investigation and the use of teeth as a source of information including age determinations and elemental content. An introduction to fire investigation will be given together with a more detailed discussion of important aspects of analytical chemistry relevant to forensic investigations, such as the use of chromatography in fire debris analysis. In terms of the chemical analysis of teeth, the use of amino acid analysis for age determination and metal analysis for possible assignment of sample origin (environmental, geographical).

The use of advanced analytical techniques such as GCMS and LCMS will be discussed with applications in forensic toxicology. Examples which illustrate extraction from complex biological matrices, instrumental analysis and interpretation of analytical results will be discussed.

Biography

Dr Calum Morrison completed a B.Sc.(Hons) in Chemistry (1992) and a Ph.D. in Forensic Toxicology (1996) both from the University of Glasgow. He carried out casework in the Department of Forensic Medicine and Science while completing his Ph.D. until 2000 when he moved to the Police Forensic Science laboratory in Dundee and carried out case work in the Forensic Chemistry section, in particular drugs, alcohol and fire investigation.

In the summer of 2004 he moved to the University of the West of Scotland (formerly the University of Paisley) to take up a post as Lecturer in Forensic Science where he was heavily involved in the development of the Forensic Science degree program.

He teaches in the area of Forensic and Analytical Chemistry and currently supervises 3 Ph.D. students in the area of forensic and environmental chemistry. Research interests include the application of chiral analysis and other novel techniques to forensic/environmental chemistry.