

*A one day conference investigating the use of new technologies in the field of forensics.*

*Organised by*



*on behalf of*

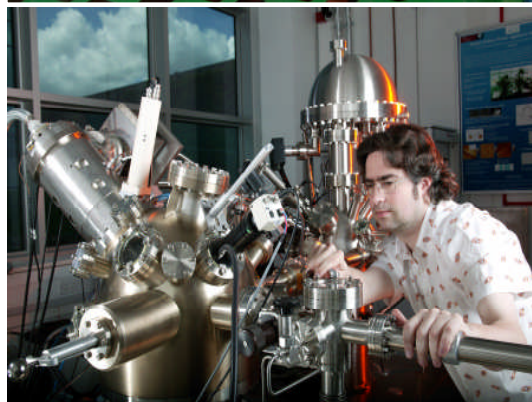


The Institute of Materials, Minerals & Mining



*Supported by:*

# Materials in Forensic Science



**Wednesday 7th May 2008**

Venue: Institute of Materials, Minerals and Mining  
1 Carlton House Terrace, London, SW1Y 5DB

*A one day conference organised by  
IOM Communications Ltd.*

[www.iom3.org/events/forensic](http://www.iom3.org/events/forensic)



THE FORENSIC SCIENCE SOCIETY

7th May 2008

IOM<sup>3</sup>, London



Investigating the use of new technologies in the field of forensics.

# Materials in Forensic Science

## PROGRAMME

As the field of forensic science becomes ever more sophisticated, new advances in materials technology and analytical techniques are set to play an increasingly important role. Methodologies developed in the laboratory need to be optimised and fully developed for the forensic environment before they become suitable for practical use in forensic science, where often only minute quantities of materials are available.

In the area of fingerprint technology, the detection of latent fingerprints on a variety of surfaces, often affected by fire or heat damage has resulted from developments in the application of materials technology, and the use of nanotechnology has resulted in an increasingly detailed picture of such things as the ethnic background and lifestyle habits of the owner of the fingerprint.

Analytical Techniques, such as ion beam analysis, are highly sensitive to trace elements and show how minute traces of material can be identified to detect, for example, the result of poisoning, or the composition of inks in artwork or on bank notes. Surface texture analysis of quartz grains can identify material carried on the soles of shoes and be used to track a person's movements, and spectroscopy techniques can link shot from the scene of a crime to the criminal.

In the Forensic Archaeology session we will hear an overview of developments in this discipline, followed by some detailed descriptions of how human skeletal remains can be used to reveal incredible details about their owner, and also how bone can be used specifically as a forensic material.

Finally in the fraud and counterfeiting session we will look at how carbon isotope ratio measurements can detect drug counterfeits, how the authenticity of artwork can be verified by the microscopic analysis of materials and pigments, and how counterfeit coins can be identified.

**Chairman: Brian Rankin, Head of Centre for Forensic Investigation, University of Teesside, President of the Forensic Science Society**

### SESSION 1: Fingerprint Technology

**10:00 Fingerprint Development - the Role of Materials Science**, Dr Steve Bleay, Fingerprint and Footwear Forensics Group, Home Office Scientific Development Branch

**10:25 Fingerprint Visualisation on Metal Surfaces Using Scanning Kelvin Probe Technology**  
Dr Geraint Williams, Materials Research Centre, Swansea University

**10:50 Nanotechnology applied to Forensic Science**, Professor David Russell, University of East Anglia

### SESSION 2: Analytical Techniques

**11:40 Trace Element Detection by Ion Beam Analysis**

Dr Melanie Webb, Surrey Ion Beam Centre, University of Surrey

**12:05 Quartz Grain Surface Texture Analysis in Forensic Casework**

Dr Ruth Morgan, Jill Dando Institute, University College London

**12:30 Use of ICP Spectroscopy and Mass Distribution to Quantify Source of Shotgun Cartridge Pellets**, Professor John Wright, Independent Consultant Metallurgist, Former Professor of Industrial Metallurgy, University of Aston

### SESSION 3: Forensic Archaeology

**13:50 Archaeology and the Crime Scene**, Professor John Hunter, Professor of Ancient History and Archaeology, Institute of Archaeology and Antiquity, University of Birmingham

**14:25 New Dating Methodologies and Techniques for Identifying Human Skeletal Remains**, Dr Stuart Black, University of Reading

**14:50 Bone as a Forensic Material**, Professor Keith Rogers, Cranfield University

### SESSION 4: Counterfeiting and Fraud

**15:40 Novel Approaches for Counterfeit Drug Detection Combining High Accuracy Sulfur and Carbon Isotope 1 Ratio Measurements**, Dr Rebeca Santamaria-Fernandez, LGC

**16:05 Recent Developments in the Scientific Detection of Art Fraud**  
Dr Nicholas Eastaugh, University of Oxford

**16:30 Forensic Techniques to Detect Counterfeit Coins**, Dr Matthew Higginson, LGC Forensics

The Institute of Materials, Minerals & Mining, 1 Carlton House Terrace, London, SW1Y 5DB Tel. 020 7451 7300 Fax: 020 7839 5513; [www.iom3.org](http://www.iom3.org)

#### HOW TO FIND US

Based in the heart of London, the Institute of Materials, Minerals and Mining is located in Carlton House Terrace, just off Waterloo Place, between Pall Mall and the Mall.

**ON FOOT** from the Underground: It is less than 5 minutes walk from Piccadilly Circus Underground Station, 10 minutes from Charing Cross, 10 minutes from Green Park and 20 minutes from Victoria.

**BY RAIL:** All main railways are within easy reach using Underground Railway links.

**BY AIR: Heathrow Airport:** Take the Heathrow Express into Paddington Station and then take the underground (Bakerloo line) and alight at Piccadilly Circus.

**Gatwick Airport:** Take the Gatwick Express into Victoria and then take a black cab, or make a 20 minute walk going through St. James's Park.

**Stansted Airport:** Take the Stansted Express into Liverpool Street Station and then the underground via the Central line to Holborn, change to the Piccadilly line and alight at Piccadilly Circus.

**Luton Airport:** Take a Thameslink train to Kings Cross, get on the Northern line and alight at Charing Cross tube station.

#### Registration Fees

- *Professional Members of IOM<sup>3</sup>: £160+VAT = £188*
- *Affiliate Members of IOM<sup>3</sup> and the Forensic Science Society: £200+VAT = £235*
- *Non-members: £250+VAT = £293.75*
- *Student and Retired members of IOM<sup>3</sup> or supporting organizations: £65+VAT = £76.37*
- *Student and Retired non-members: £90+VAT = £105.75*

**Online registration**, IOM<sup>3</sup> membership details, and directions to IOM<sup>3</sup> are available at [www.iom3.org/events/forensic](http://www.iom3.org/events/forensic).

For further information about this event, or to enquire about exhibition space, please contact Dawn Bonfield at [dawn.bonfield@iom3.org](mailto:dawn.bonfield@iom3.org) or telephone 02074517375.

**Online registration at**  
**[www.iom3.org/events/forensic](http://www.iom3.org/events/forensic)**