

Centre for Forensic Science Quarterly Newsletter (Jun-Aug) 2013

From the Director's Desk:

Dear Centre's Members, Associates, Colleagues and Friends,

Our Centre was originally established in 2002, capitalising on UTS's leading position in forensic science as the first university in Australia to offer an undergraduate degree in this field back in 1994. Since then, our Centre has steadily built its reputation for research excellence and impact through strong Honours and PhD programs and superior collaborative forensic science research. However, our Centre never published a newsletter sharing its activities and successes with the broad community.

In this day and age, communication and marketing has become almost as important as the substantial work undertaken by any organisation. This may be unfortunate in some respects, but this is the reality of our world! For this reason, the publication of the first issue of this newsletter is a significant milestone. But don't forget, the newsletter is only as good as the material we receive from you. I warmly thank the 'Doctor-to-be' Scott Chadwick for his significant contribution as editor of this first edition, and wish you a happy reading!

Professor Claude Roux

Upcoming Events:

Australian Academy of Forensic Sciences (AAFS) Symposium

**24th – 25th August – Sydney Masonic Centre
(Registrations close 21/08/2013)**

NSW ANZFSS Branch Meeting

**28th August 6 pm – UTS Broadway Campus Building 4,
Level 2, Room 2.38.**

UTS Science in Focus – Death, Decomposition and Detector Dogs – Speaker: Prof. Shari Forbes

**12th September 6-8 pm – UTS Great Hall, Building 1,
Level 5. (Booking through UTS science website)**

Research Spotlight – Verena Taudte: A Shooting GS(ta)R.

Gunshot Residue (GSR) analysis has largely been limited to inorganic analysis of particles such as scanning electron microscopy/energy dispersive X-ray spectrometry (SEM/EDS). However since the 1980's, lead-free and heavy-metal free ammunition have been commercialised and can increasingly be found in casework. This trend is threatening the current protocol for GSR analysis as these ammunitions do not form characteristic GSR particles and therefore can lead to false-negative results.



Recently there has been an increased interest in the analysis of organic gunshot residues (OGSR). At UTS, PhD student Verena Taudte who is currently in her 2nd year of candidature has been working in this area and was recently able to discuss her research with the European

Network of Forensic Science Institutes (ENFSI) in Germany.

Verena has been successful in separating 35 components of OGSR by Ultra High Pressure Liquid Chromatography (UHPLC) with UV detection. These compounds cover a wide range of compound classes such as propellants, stabilisers, plasticisers and flash suppressors. Verena now aims to optimise her sampling technique in order to develop an extraction method that will collect both organic and inorganic GSR. Part of her project will also aim to develop standard operating procedures for the routine collection and detection for inorganic and organic GSR.

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Congratulations

- PhD students Scott Chadwick, Natasha Stojanovska and Michael Wood, recently submitted their doctoral theses. We wish them the best of luck with their examiners reports.
- Professor Claude Roux, in collaboration with Professors Chris Lennard (University of Canberra) and Oliver Hofstetter (Northern Illinois University), the Australian Federal Police and Victoria Police, was successful in obtaining an ARC linkage grant (\$260K from ARC and \$135K from partners) for Dr. Xanthe Spindler's research titled 'Universal Immunogenic Reagents for the Detection of Latent Fingermarks'. This will significantly enhance our research capacity in this field and follows recently obtained funding from the Defence Science and Technology Organisation - DSTO (\$100K). This body of research aims to be able to detect fingermarks on human skin, a feat no current technique is able to achieve.
- Dr. Lucas Blanes and Professors Philip Doble and Claude Roux were successful in attracting DSTO funding through their National Security Science and Technology Centre for research in the area of rapid in-field detection of explosives using micropad technology.
- Associate Professor Peter Gunn, Marie Morelato, Dr Alison Beavis, Professor Philip Doble and Professor Claude Roux on winning awards for best forensic research papers by the National Institute of Forensic Science.
- Professor Shari Forbes who recently gave an interview on ABC Radio National regarding research currently being conducted by her research group. Her interview can be streamed on the ABC Radio National website.

Out and About

International Fingerprint Research Group Meeting (IFRG) 2013 – Jerusalem - Israel 9th-14th June

Professor Claude Roux and Dr Xanthe Spindler along with Associate Centre Member Professor Chris Lennard attended the meeting and presented research currently being undertaken at the Centre. This meeting provided an excellent opportunity for the Centre's research to be presented at an international forum. Attendance at this meeting is by invitation only and is generally limited to representatives from active fingerprint research groups around the world. CFS was very well represented, with almost 15% of the presentations from research currently being conducted by our research group.



(Pictured Above): Delegates from the International Fingerprint Research Group at Masada



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The presentations covered an array of fingerprint research areas including; novel detection techniques, identification and biometrics to characterisation of latent fingerprint residues. As with any conference, the social program was the highlight for many with tours of the Old City of Jerusalem and visit to the Dead Sea.

UC-UTS-AFP Research and Development Workshop – Canberra – 25th-26th July.

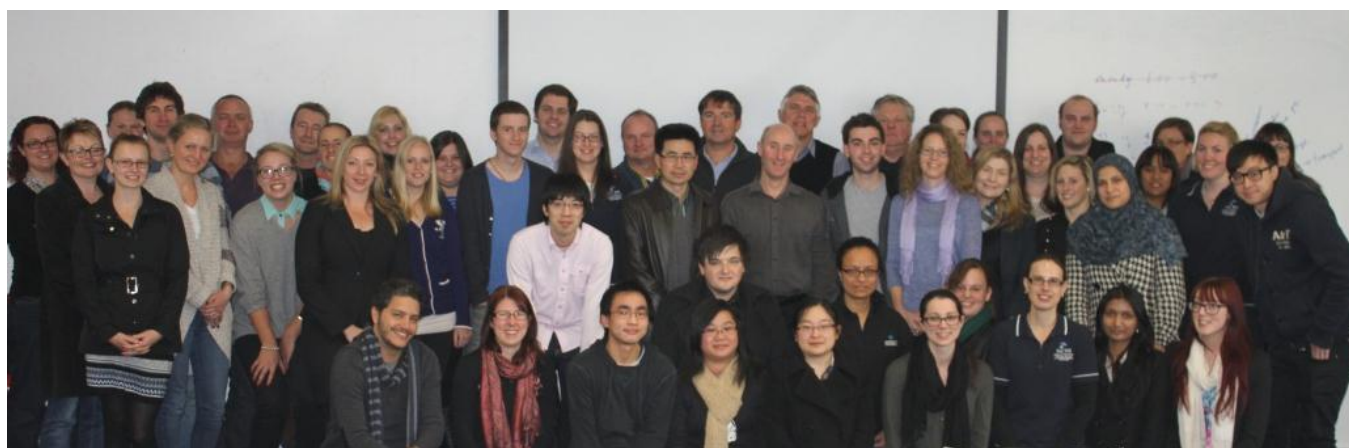
The 3rd annual research and development workshop hosted by the University of Canberra provided an excellent opportunity for collaboration with other forensic researcher and industry partners. Over 40 delegates from UTS braved the icy cold winds of Canberra to present their research on a wide range of topics. This workshop provided an excellent opportunity for new researchers to develop presentation skills and foster relationships with industry partners. Thank you Dr. Michelle Gahan (UC) and Dr. Alison Beavis for organising the logistics.

Forensic Intelligence Becomes Transversal

Marie Morelato recently travelled to Lausanne, Switzerland to collaborate with Professor Oliver Ribaux and Simon Baechler, University of Lausanne, to work on developing a general forensic intelligence model based on drug profiling and document examination. We all look forward to the outcomes!

UTS-UC-AFP Fibre & Textile Research Group

A UTS-UC-AFP Fibre and Textile Research Group was recently established. This group aims to strategically inform and support our collaborative research in this area following the very successful model of the UTS-UC-AFP-NSWPF Fingerprint Research Group (6 years of existence already!). At the first meeting, a broader discussion on the gaps and future needs for fibre and textile took place and several areas of possible focus were identified.



UC-UTS-AFP R&D Workshop 25-26 July 2013

**Centre for Forensic Science
Quarterly Newsletter
(Jun-Aug) 2013****European Academy of Forensic Science (EAFS)**

Elsevier recently released the special edition featuring papers presented at the 2012 EAFS Conference in The Hague, the Netherlands. The Centre for Forensic Science succeeded in having three papers in this edition (i.e. 17% of published papers!). This is quite an achievement – well done to all parties concerned:

B. von der Lüche, L. A. Dawson, R. W. Mayes, **S. L. Forbes**, S. Fiedler, *Investigation of sterols as potential biomarkers for the detection of pig (*S. s. domesticus*) decomposition fluid in soils*. Forensic Science International, 2013. **230**(1-3): p. 68-73.

K. Braasch, **M. de la Hunty**, J. Deppe, **X. Spindler**, A. A. Cantu, **P. Maynard**, C. Lennard, **C. Roux**, *Nile red: Alternative to physical developer for the detection of latent fingerprints on wet porous surfaces*, Forensic Science International, 2013. **230** (1-3): p. 74-80.

J. Abraham, C. Champod, C. Lennard, **C. Roux**, *Spatial analysis of corresponding fingerprint features from match and close non-match populations*, Forensic Science International, 2013. **230**(1-3): p. 87-98.

Publications in 2013

A.C. Lowe, D.V. Beresford, D.O. Carter, F. Gaspari, R.C. O'Brien, **B.H. Stuart**, **S.L. Forbes**, *The effect of soil texture on the degradation of textiles associated with buried bodies*. Forensic Science International, 2013. **231**(1-3): p. 331-339.

K. Jones, S. Benson, **C. Roux**, *The forensic analysis of office paper using carbon isotope ratio mass spectrometry – Part 1: Understanding the background population and homogeneity of paper for the comparison and discrimination of samples*. Forensic Science International, 2013. **231**(1-3): p. 354-363.

K. Jones, S. Benson, **C. Roux**, *The forensic analysis of office paper using carbon isotope ratio mass spectrometry—Part 2: Method development, validation and sample handling*. Forensic Science International, 2013. **231**(1-3): p. 364-374.

A. Lloyd, M. Russell, **L. Blanes**, **P. Doble**, **C. Roux**, *Lab-on-a-chip screening of methamphetamine and pseudoephedrine in samples from clandestine laboratories*. Forensic Science International, 2013. **228** (1-3): p. 8-14.

A. Pham, T. Kelly, **S. Fu**, *Urine adulteration: can bleach be used to mask MDMA use?* Analytical Methods, 2013 **5** p. 3948-3955.

A. Molnar, J. Lewis, **S. Fu**, *Recovery of spiked Δ^9 -tetrahydrocannabinol in oral fluid from polypropylene containers*. Forensic Science International, 2013. **227** (1-3): p. 69-73.

J. Lewis, **R. Shimmon**, **S. Fu**, *Pethidinic acid: Corroboration of a doctors denial of pethidine re-use*. Journal of Analytical Toxicology, 2013 **37** (3): p. 179-181.

M. Morelato, **A. Beavis**, M. Tahtouh, O. Ribaux, P. Kirkbride, **C. Roux**, *The use of forensic case data in intelligence-led policing: The example of drug profiling*. Forensic Science International, 2013. **226** (1-3): p. 1-9.

M. Morelato, **A. Beavis**, P. Kirkbride, **C. Roux**, *Forensic applications of desorption electrospray ionisation mass spectrometry (DESI-MS)*. Forensic Science International, 2013. **226** (1-3): p. 10-21.

F. Jackson, **P. Maynard**, K. Cavanagh-Steer, T. Dusting, **C. Roux**, *A survey of glass found on the headwear and head hair of a random population vs. people working with glass*. Forensic Science International, 2013. **226** (1-3): p. 125-131.

S. Stadler, P.-H. Stefanuto, M. Brokl, **S.L. Forbes**, J.-F. Focant, *Characterization of volatile organic compounds from human analogue decomposition using thermal desorption coupled to comprehensive two-dimensional gas chromatography-time-of-flight mass spectrometry*. Analytical Chemistry, 2013. **85** (2): p. 998-1005.

N. Stojanovska, **S. Fu**, M. Tahtouh, T. Kelly, **A. Beavis**, K.P. Kirkbride, *A review of impurity profiling and synthetic route of manufacture of methylamphetamine, 3,4-methylenedioxymethylamphetamine, amphetamine, dimethylamphetamine and p-methoxyamphetamine*. Forensic Science International, 2013. **224** (1-3): p. 8-26.