ISO-TOPICS: THE FIRMS NETWORK NEWSLETTER

October 2022

ABOUT US

The Forensic Isotope Ratio Mass Spectrometry (FIRMS) Network was founded to develop the scope of stable isotope techniques in forensic applications.

FIRMS brings together chemists, physicists, materials scientists, and life scientists who employ isotopic analysis in their respective fields. FIRMS is helping to focus collective knowledge and expertise on improving methods for crime detection and reduction.

Speakers that participated in the 8th FIRMS Network Conference are encouraged to publish their work in an upcoming special issue of the journal Science & Justice.

WELCOME

Welcome to the FIRMS October 2022 newsletter.

DISCLAIMER

Reference to or mention of any commercial product or process by specific trademark or manufacturer within this newsletter does not necessarily represent an endorsement by the FIRMS Network.

8TH FIRMS NETWORK CONFERENCE

To those who attended the recent (virtual) FIRMS Network Conference, thank you for your participation. We appreciate in advance any and all feedback you can provide via the follow up survey that was emailed. This will help make the next conference even more successful. You can also send feedback on the conference or any other topic related to the network (i.e., PT schemes, Good Practice Guide, etc.) to firms@forensic-isotopes.org.

Thank you for attending the (virtual) 8th FIRMS Network Conference!

The next triennial conference will take place in 2025. In the meantime, 2022 conference speakers are encouraged to publish their work in an upcoming special issue of the journal *Science & Justice*, with guest editors Helen Salouros and James Carter. Please contact us at firms@forensic-isotopes.org with any questions about preparing an article for the special issue.

UPDATES FROM THE STEERING GROUP

This is a last call to register your interest in a **case-based proficiency test**: https://www.forensic-isotopes.org/CBPT.php

The scenario will involve polymer-based physical evidence and will require the comparison of two or more exhibits by whatever methods the laboratory feels appropriate. Laboratories will be expected to provide a report in their usual format. Reports will be anonymised and sent to a member of the FIRMS Steering Group to compile a summary that will be circulated to all participants.

Surplus materials from prior proficiency test (PT) schemes organized by the FIRMS Network are now available for distribution to members free of charge on a first-come, first-served basis. Available materials include: caffeine, casein, cellulose, cocoa, collagen, glycine, honey, nylon, olive oil, phenacetin, PVC, and sodium nitrate. Contact us at firms@forensic-isotopes.org if you are interested in any of these materials.

Materials remaining from prior PT schemes are now available to FIRMS Network members.

Please note that material containers have been opened and subsampled so user beware. The materials are not currently part of a PT scheme, but they are materials with some prior measurements and are therefore potentially useful to laboratories for method development. However, they are not necessarily recommended for calibration.

NEWS AND NOTICES

Technical Committee (TC) 460 of the European Committee for Standardization (CEN) is focused on food authenticity and includes a working group specifically for stable isotope analysis. Outputs of **CEN/TC 460** can be found by searching https://www.cencenelec.eu.

The **CCQM Working Group on Isotope Ratios** (https://www.bipm.org/en/committees/cc/ccqm/wg/ccqm-irwg) had its latest meeting 24-26 October 2022.

Upcoming meetings of note include:

The American Academy of Forensic Sciences (AAFS) is celebrating the **75th anniversary of the AAFS Annual Scientific Conference** 13-18 February 2023 in Orlando, Florida.

The **Survivor's Guide to Stable Isotope Ecology** will return in late March 2023; it will take place in Sicily. This weeklong course covers the essentials of collecting, analysing, and interpreting stable isotope data.

The IAEA will host an **International Symposium on Isotope Hydrology** in Vienna, Austria 3-7 July 2023.

The European Society of Isotopes Research's **Isotope Workshop XVI** will take place 10-14 July 2023 in Salzburg, Austria.

The 13th International Conference on the Applications of Stable Isotope Techniques to Ecological Studies (**IsoEcol**) will be held in 2024 at the University of New Brunswick in Canada.

HIGHLIGHTED PUBLICATIONS

The Steering Group has started collating additions and updates for a 3rd edition of the *Good Practice Guide for Isotope Ratio Mass Spectrometry*. **Members are encouraged to send suggested edits** to gpg@forensic-isotopes.org.

PUBLICATIONS LIST

Disclaimer: This section contains a non-comprehensive list of recent publications that may be of interest to members. Inclusion does not necessarily mean that the FIRMS Network approves the content. You are encouraged to consider critically whether (i) the experimental work complies with SI guidelines and the Good Practice Guide; and (ii) the conclusions drawn are based on sound scientific background information.

Alquezar RD, Costa FJV, Sena-Souza JP, et al (2022) A feather hydrogen (δ^2H) isoscape for Brazil. PLoS ONE 17:e0271573. https://doi.org/10.1371/journal.pone.0271573

Anh HL, Nhan DD, Frew R, Quynh TM (2022) Application of stable isotope technique to authenticate the geographical origin of imported apple products. Journal of Radioanalytical and Nuclear Chemistry 331:3613–3621. https://doi.org/10.1007/s10967-022-08450-7

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Bowen GJ, Guo JS, Allen ST (2022) A 3-D groundwater isoscape of the contiguous USA for forensic and water resource science. PLoS ONE 17:e0261651. https://doi.org/10.1371/journal.pone.0261651

Calvi M, Bontempo L, Pizzini S, et al (2022) Isotopic characterization of Italian industrial hemp (*Cannabis sativa* L.) intended for food use: A first exploratory study. Separations 9:136. https://doi.org/10.3390/separations9060136

Chartrand MMG, Meija J, Hélie J-F, et al (2022) Characterization of vanillin carbon isotope delta reference materials. Analytical and Bioanalytical Chemistry 414:7877–7883. https://doi.org/10.1007/s00216-022-04322-x

Cormick J, Carter JF, Currie T, et al (2022) The synthesis of MDA from helional and characterisation by isotope ratio mass spectrometry. Forensic Chemistry 30:100433. https://doi.org/10.1016/j.forc.2022.100433

Cusa M, St John Glew K, Trueman C, et al (2022) A future for seafood point-of-origin testing using DNA and stable isotope signatures. Reviews in Fish Biology and Fisheries 32:597–621. https://doi.org/10.1007/s11160-021-09680-w

Gherghely I, Rácz-Fazakas T, Gór C, et al (2022) Effect of the production site on stable isotopes of ethanol in fruit spirits. Talanta Open 5:100107. https://doi.org/10.1016/j.talo.2022.100107

Huang Y, Zhu J, Hu C, et al (2022) Desulfurization of black powder for isotopic profiling using isotope ratio mass spectrometry. Forensic Science International 337:111379. https://doi.org/10.1016/j.forsciint.2022.111379

Liu Y, Peng Z, Zhou Y, et al (2022) Pilot study on provenance tracing of cocoons via strontium isotopes. Science of The Total Environment 851:157982. https://doi.org/10.1016/j.scitotenv.2022.157982

Mitchell CM, Oxtoby LE, Shaw PA, et al (2022) Carbon isotope ratios of plasma and RBC fatty acids identify meat consumers in a 12-week inpatient feeding study of 32 men. The Journal of Nutrition nxac213. https://doi.org/10.1093/jn/nxac213

O'Sullivan R, Schmidt O, O'Sullivan M, et al (2022) Isolation of casein for stable isotope ratio analysis of butter, cheese, and milk powder. Rapid Communications in Mass Spectrometry. https://doi.org/10.1002/rcm.9402

Oerter EJ, Singleton M, Pili E, et al (2022) The oxygen stable isotope composition of CRM 125-A UO2 standard reference material. Applied Geochemistry 146:105470. https://doi.org/10.1016/j.apgeochem.2022.105470

Pérez PA, Docmac F, Harrod C (2022) No evidence for effects of mill-grinding on $\delta^{13}C$, $\delta^{15}N$ and $\delta^{34}S$ values in different marine taxa. Rapid Communications in Mass Spectrometry 36. https://doi.org/10.1002/rcm.9336

Peter T, Carter JF, Bennett E, Anuj SR (2022) The isotopic compositions of hexamine solid fuel tablets used to manufacture hexamethylene triperoxide diamine (HMTD) explosive. Forensic Chemistry 31:100446. https://doi.org/10.1016/j.forc.2022.100446

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Sehrawat JS, Agrawal S, Sankhyan D, et al (2022) Pinpointing the geographic origin of 165-year-old human skeletal remains found in Punjab, India: Evidence from mitochondrial DNA and stable isotope analysis. Frontiers in Genetics 13:813934. https://doi.org/10.3389/fgene.2022.813934

This newsletter was compiled and edited by Lesley Chesson. It was created using a Microsoft® Word template.

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van den Heever L, Elburg MA, Iaccheri L, et al (2022) Identifying the origin of lead poisoning in white-backed vulture (*Gyps africanus)* chicks at an important South African breeding colony: A stable lead isotope approach. Environmental Science and Pollution Research. https://doi.org/10.1007/s11356-022-23209-z

Watkinson CJ, Rees GO, Gwenael MC, et al (2022a) Stable isotope ratio analysis for the comparison of timber from two forest concessions in Gabon. Frontiers in Forests and Global Change 4:650257. https://doi.org/10.3389/ffgc.2021.650257

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