

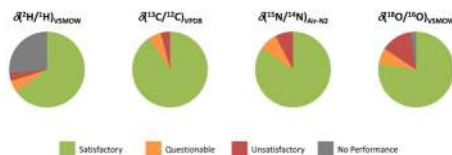
ISO-TOPICS: THE FIRMS NETWORK NEWSLETTER

May 2021

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.



WELCOME

Welcome to the FIRMS May 2021 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.

THE FIRMS NETWORK'S PT SCHEME

With co-authors from LGC Standards, members of the FIRMS Network have published an article on the history of the inter-laboratory isotope analysis exercises that have been offered to the forensic science community since 2002.

The FIRMS Network's PT Scheme: What can be learned about inter-laboratory performance?

The article presents and discusses results for the FIRMS PT scheme, including inter-laboratory comparability over time not just for individual laboratories but also for particular matrices that have been analysed in multiple rounds. It was published in the journal *Forensic Chemistry*: <https://www.sciencedirect.com/science/article/pii/S2468170921000023>. The article is freely available via open access.

UPDATES FROM THE STEERING GROUP

The group is currently recruiting **student members**. Please contact us *Shown above is the graphical abstract for a recent article on the FIRMS Network's PT scheme. The article is available via open access.*

... members. **Luana Bontempo**, from Fondazione Edmund Mach (FEM), is replacing Federica Camin, who has taken a temporary position at the IAEA. **Ethan Strak**, from Food Forensics,

is replacing Paul Jackson. Welcome, Luana and Ethan!

The term for the current Chair, **Phil Dunn** (LGC Standards), ends September 2021. More information on his replacement will be forthcoming. In the meantime, please join the Steering Group in thanking Phil for his dedication and hard work.

The term for the current Chair of the Steering Group, Phil Dunn, will end in September 2021. Thank you for your service, Phil!

The Steering Group continues to plan for the 8th FIRMS Network Conference, which is scheduled to take place in 2022. As a reminder, feedback on the 2019 conference is still welcome.

NEWS AND NOTICES

The ongoing pandemic continues to impact meetings and other events:

The International Conference on the Applications of Stable Isotope Techniques to Ecological Studies (**IsoEcol**) held a virtual “COVID Interlude” 19-21 May 2021. The 12th IsoEcol is tentatively scheduled to take place 6-10 June 2022 in Gaming, Austria.

The **ASITA** (Advances in Stable Isotopes Techniques and Applications) meeting originally scheduled to take place in Montreal, Canada in spring 2020 has been postponed once again, to 2022. Exact dates and conference website will be available later this year.

The **European Academy of Forensic Science** has postponed the meeting scheduled to take place in

Stockholm, Sweden for a year. New dates are 30 May to 3 June 2022.

The **Joint European Stable Isotope User Meeting** (JESIUM) has been postponed to October 2022; exact dates are not yet available.

The Isotope Workshop XVI planned by the **European Society of Isotopes Research** has been rescheduled for 11-14 July 2023. It will take place in Salzburg, Austria.

The 23rd Triennial Meeting of the **International Association of Forensic Sciences**, in conjunction with the 26th Symposium of the **Australian and New Zealand Forensic Science Society**, is scheduled to take place 20-24 November 2023 in Sydney, Australia.

HIGHLIGHTED PUBLICATIONS

The recent publication highlighting lessons learned from the inter-laboratory exercises offered by the FIRMS Network (available online: <https://www.sciencedirect.com/science/article/pii/S2468170921000023>) follows two earlier publications on the PT scheme. These are:

Carter JF, Hill JC, Doyle S, Lock C (2009) Results of four inter-laboratory comparisons provided by the Forensic Isotope Ratio Mass Spectrometry (FIRMS) network. <https://doi.org/10.1016/j.scijus.2008.12.002>

Carter JF, Fry B (2013) Ensuring the reliability of stable isotope ratio data—beyond the principle of identical treatment. Analytical and Bioanalytical Chemistry <https://doi.org/10.1007/s00216-012-6551-0>

For additional publications of potential interest to members, please see the following list.

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.

Assonov S, Fajgelj A, Allison C, Gröning M (2021) On the metrological traceability and hierarchy of stable isotope reference materials aimed at realisation of the VPDB scale: Revision of the VPDB $\delta^{13}\text{C}$ scale based on multipoint scale-anchoring RMs. *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9018>

Assonov S, Fajgelj A, Hélie J, et al (2021) Characterisation of new reference materials IAEA-610, IAEA-611 and IAEA-612 aimed at the VPDB $\delta^{13}\text{C}$ scale realisation with small uncertainty. *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9014>

Benson S, Jones K (2021) *Isotope Ratio Mass Spectrometry*. In: Wolstenholme R, Jickells S, Forbes S (eds) *Analytical Techniques in Forensic Science*, 1st edn. Wiley, pp 267–293

Chesson LA, Beasley MM, Bartelink EJ, et al (2021) Using bone bioapatite yield for quality control in stable isotope analysis applications. *Journal of Archaeological Science: Reports* <https://doi.org/10.1016/j.jasrep.2020.102749>

Chowdhury SA, Carter JF, Anuj SR, et al (2021) The validity of protein in Australian honey as an internal standard for C4 sugar adulteration. *Food Analytical Methods* <https://doi.org/10.1007/s12161-020-01938-6>

Cormick J, Carter JF, Currie T, et al (2021) A survey of novel MDA and MDMA precursors by isotope ratio mass spectrometry. *Forensic Chemistry* <https://doi.org/10.1016/j.forc.2021.100341>

Dunn PJH, Carter JF, Chesson LA, et al (2021) The FIRMS Network's PT scheme: What can be learned about inter-laboratory performance? *Forensic Chemistry* <https://doi.org/10.1016/j.forc.2021.100306>

El Hawari K, Al Iskandarani M, Jaber F, et al (2021) Evaluation of honey authenticity in Lebanon by analysis of carbon stable isotope ratio using elemental analyzer and liquid chromatography coupled to isotope ratio mass spectrometry. *Journal of Mass Spectrometry* <https://doi.org/10.1002/jms.4730>

Fauberteau AE, Chartrand MMG, Hu L, et al (2021) Investigating a cold case using high-resolution multi-isotope profiles in human hair. *Forensic Chemistry* <https://doi.org/10.1016/j.forc.2020.100300>

Hélie J, Hillaire-Marcel C (2021) Designing working standards for stable H, C, and O isotope measurements in CO_2 and H_2O . *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9008>

Khatri PK, Larcher R, Camin F, et al (2021) Stable isotope ratios of herbs and spices commonly used as herbal infusions in the Italian market. *ACS Omega* <https://doi.org/10.1021/acsomega.1c00274>

Liu X, Liu Z, Qian Q, et al (2021) Isotope chemometrics determines farming methods and geographical origin of vegetables from Yangtze River Delta Region, China. *Food Chemistry* <https://doi.org/10.1016/j.foodchem.2020.128379>

Liu Z, Yuan Y, Zhao Y, et al (2020) Differentiating wild, lake-farmed and pond-farmed carp using stable isotope and multi-element analysis of fish scales with chemometrics. *Food Chemistry* <https://doi.org/10.1016/j.foodchem.2020.127115>

Magozzi S, Bataille CP, Hobson KA, et al (2021) Calibration chain transformation improves the comparability of organic hydrogen and oxygen stable isotope data. *Methods in Ecology and Evolution* <https://doi.org/10.1111/2041-210X.13556>

Meikle J, Jones K, Cresswell SL, et al (2021) A homogeneity study of cling films using stable isotope ratios. *Forensic Chemistry* <https://doi.org/10.1016/j.forc.2021.100320>



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

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Muñoz-Redondo JM, Bertoldi D, Tonon A, et al (2021) Tracing the geographical origin of Spanish mango (*Mangifera indica* L.) using stable isotopes ratios and multi-element profiles. *Food Control* <https://doi.org/10.1016/j.foodcont.2021.107961>

Perini M, Nfor MB, Camin F, et al (2021) Using bioelements isotope ratios and fatty acid composition to deduce beef origin and zebu feeding regime in Cameroon. *Molecules* <https://doi.org/10.3390/molecules26082155>

Pianezze S, Corazzin M, Perini M, et al (2021a) Fatty acids stable carbon isotope fractionation in the bovine organism. A compound-specific isotope analysis through gas chromatography combustion isotope ratio mass spectrometry. *Journal of Chromatography A* <https://doi.org/10.1016/j.chroma.2021.461966>

Pianezze S, Perini M, Bontempo L, et al (2021b) Stable isotope ratio analysis for the characterisation of edible insects. *Journal of Insects as Food and Feed* <https://doi.org/10.3920/JIFF2020.0128>

Qi H, Moossen H, Meijer HAJ, et al (2021) USGS44, a new high purity calcium carbonate reference material for $\delta^{13}\text{C}$ measurements. *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9006>

Rogers KM, Phillips A, Fitzgerald J, et al (2021) Authentication of Indonesian coconut sugar using stable carbon isotopes. *Food Analytical Methods* <https://doi.org/10.1007/s12161-021-01967-9>

Rogers KM, Turnbull JC, Dahl J, et al (2021) Authenticating bioplastics using carbon and hydrogen stable isotopes – An alternative analytical approach. *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9051>

Solovyev PA, Fauhl-Hassek C, Riedl J, et al (2021) NMR spectroscopy in wine authentication: An official control perspective. *Comprehensive Reviews in Food Science and Food Safety* <https://doi.org/10.1111/1541-4337.12700>

Watzinger A, Schott K, Hood-Nowotny R, et al (2021) New Ag_3PO_4 comparison material for stable oxygen isotope analysis. *Rapid Communications in Mass Spectrometry* <https://doi.org/10.1002/rcm.9101>

Wu H, Lin G, Tian L, et al (2021) Origin verification of French red wines using isotope and elemental analyses coupled with chemometrics. *Food Chemistry* <https://doi.org/10.1016/j.foodchem.2020.127760>

Zhou X, Wu H, Pan J, et al (2021) Geographical traceability of south-east Asian durian: A chemometric study using stable isotopes and elemental compositions. *Journal of Food Composition and Analysis* <https://doi.org/10.1016/j.jfca.2021.103940>