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ISSN 0267-9477 CODEN JASPE2 39(10) 2343–2606 (2024)

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See Cong Li *et al.*, pp. 2363–2373. Image reproduced by permission of Cong Li from *J. Anal. At. Spectrom.*, 2024, **39**, 2363.

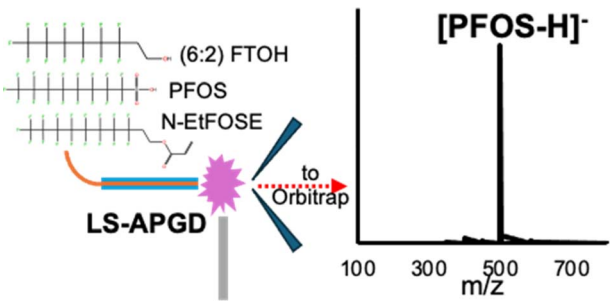
Inside cover
See Yaju Li, Dongbin Qian *et al.*, pp. 2374–2381. Image reproduced by permission of Yaju Li and Dongbin Qian from *J. Anal. At. Spectrom.*, 2024, **39**, 2374.

COMMUNICATION

2353

Initial demonstration of microplasma ionization/ Orbitrap mass spectrometry for molecular screening of perfluorinated compounds

Joseph V. Goodwin, Claudia Masucci, Davide Bleiner and R. Kenneth Marcus*

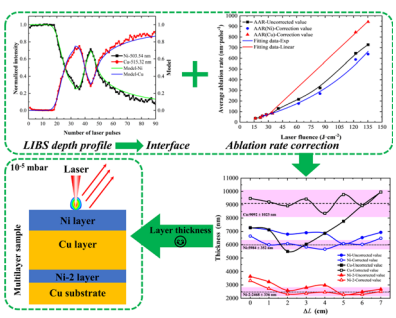


PAPERS

2363

Study of the layer thickness of multilayer sample by the LIBS method based on ablation rate correction

Shiming Liu, Cong Li,* Qi He, Huace Wu, Xiaohan Hu, Boliang Men, Ding Wu, Ran Hai, Xingwei Wu and Hongbin Ding



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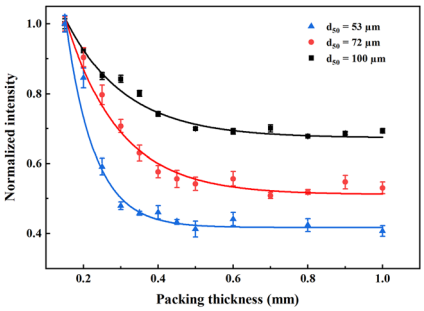
PAPERS

2374

Packing thickness dependent plasma emission induced by laser ablating thin-layer microgranular materials

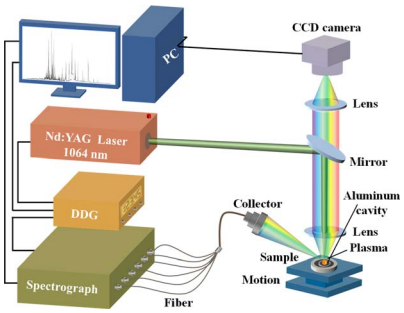
Kou Zhao, Qiang Zeng, Yaju Li,* Shu Hang Gong, Yifan Wu, Xiangyu Shi, Jinrui Ye, Xueqi Liu, Xinwei Wang, Dongbin Qian,* Liangwen Chen, Shaofeng Zhang, Lei Yang and Xinwen Ma



2382

Cavity-constrained LIBS combined with the gray wolf optimization algorithm for optimizing bidirectional long short-term memory (GWO-BiLSTM) networks for classification prediction of different brands of cigarettes

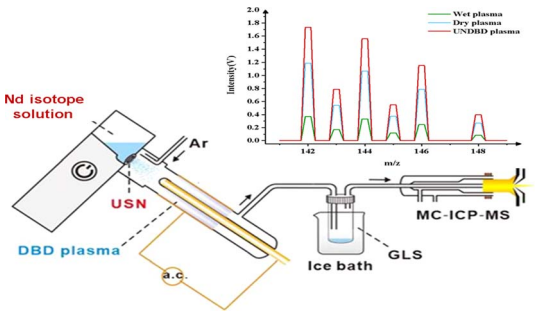
Junjie Chen, Xiaojian Hao,* Biming Mo, Shuaijun Li, Junjie Ma, Xiaodong Liang, Zheng Wang and Heng Zhang



2395

Sensitive determination of neodymium isotope in seawater by multi-collector inductively coupled plasma mass spectrometry with ultrasound nebulization-dielectric barrier discharge vapor generation as sample introduction

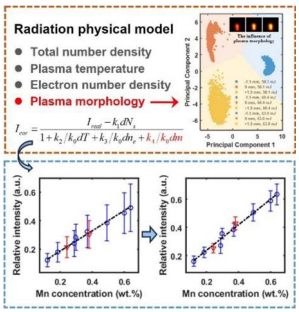
Dongyong Li, Guanghao Cui, Shanshan Chen, Yifan Qiao, Qian Liu, Jing Zhang and Qian He*



2402

A novel spectral standardization method capable of eliminating the influence of plasma morphology to improve LIBS performance

Deng Zhang,* Zili Chen, Junfei Nie, Yanwu Chu* and Lianbo Guo*



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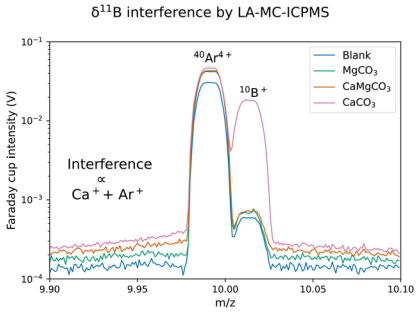
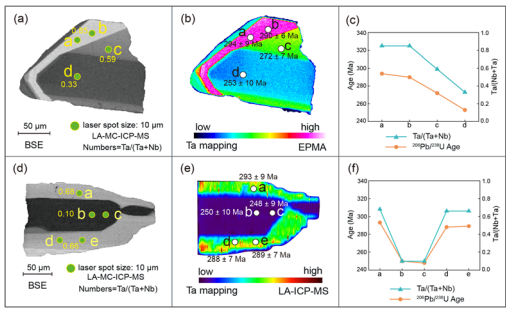


Determining the sources of (sub)permil-level inaccuracy during laser ablation-MC-ICPMS boron isotope measurements of carbonates

Douglas Coenen,* David Evans, Hana Jurikova, Matthew Dumont, James Rae and Wolfgang Müller

2421



Application of high-resolution laser multi collector ICP-MS U–Pb dating to columbite-group minerals with compositional zonation: reassessment of matrix effects among columbite-group minerals

Shuang Yang, Liang-Liang Zhang,* Rui Wang,* Di-Cheng Zhu, Jin-Cheng Xie, Qing Wang and Wen-Tan Xu

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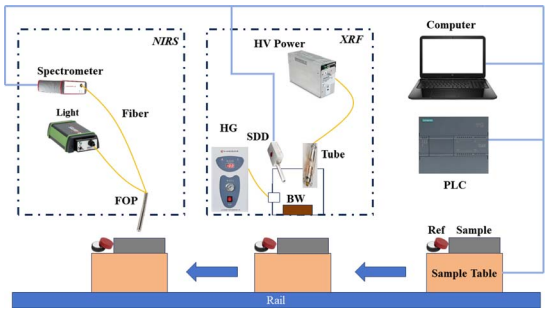

Enhancing multi-type coal quality prediction accuracy with fusion spectra and classification models using NIRS and XRF techniques

Zhedong Zhang, Jiaxuan Li, Rui Gao, Yang Zhao, Yan Zhang, Lei Zhang,* Zefu Ye, Zhujun Zhu, Peihua Zhang, Wangbao Yin* and Suotang Jia

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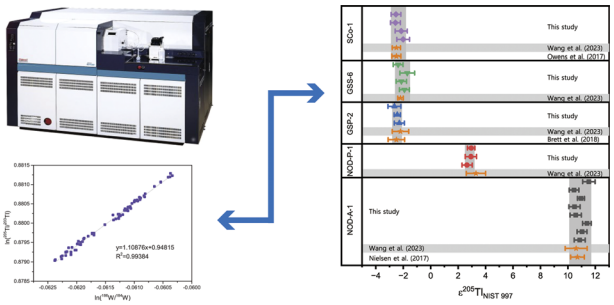

Determination of thallium isotopic composition through MC-ICP-MS with mass bias corrected using admixed W

Zhao-Yang Wang, Fei-Yu Dong, Lu Yin, Jun-Jie Liu, Qiao-Hui Zhong and Jie Li*

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PAPERS

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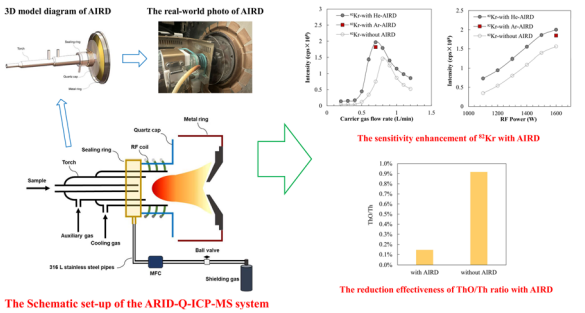
A device for reducing the atmosphere-induced interferences for analysis using inductively coupled plasma-mass spectrometry

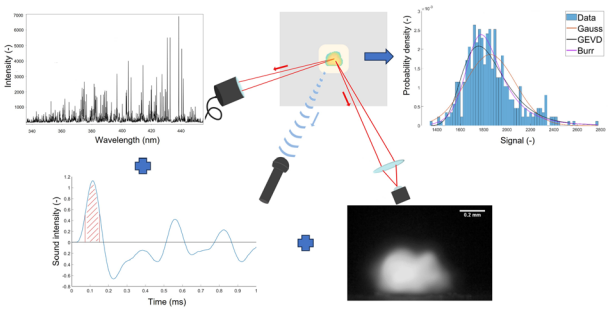
Xin Jiang, Yongsheng Liu,* Wengui Liu, Jie Lin, Zhenyi Liu, Lifei Chen, Xi Zhu, Wen Zhang and Zhaochu Hu



2461

Statistical behaviour of laser-induced plasma and its complementary characteristic signals

Jakub Buday,* Daniel Holub, Pavel Pořízka and Jozef Kaiser



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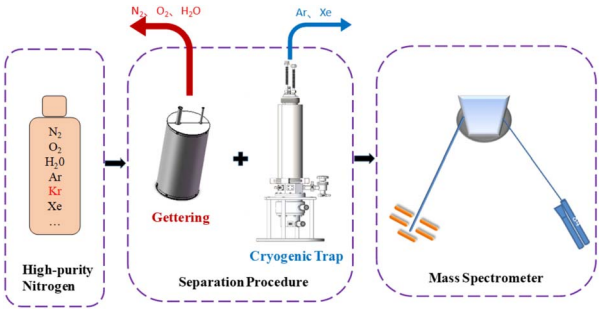
Determination of ultra-trace level krypton concentration in high-purity nitrogen using a static vacuum mass spectrometer

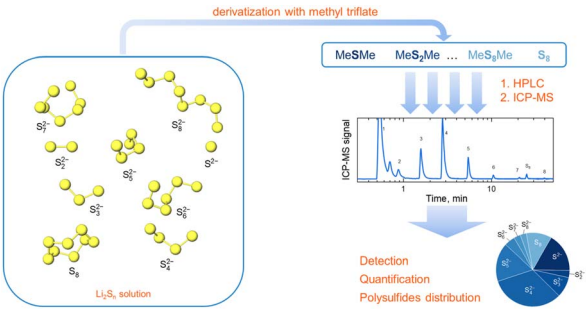
Sui Fang, Zhiming Li, Yedong Guan, Jiang Xu, Meng Li, Tai Kang, Wei Wang and Guanyi Wei*



2480

Determination of polysulfide anions and molecular sulfur *via* coupling HPLC with ICP-MS

Aleksei Sadykov, Yannick P. Stenzel, Martin Winter, Simon Wiemers-Meyer and Sascha Nowak*



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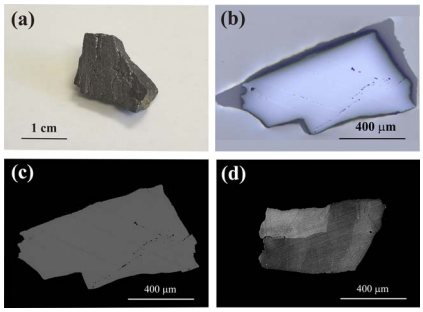
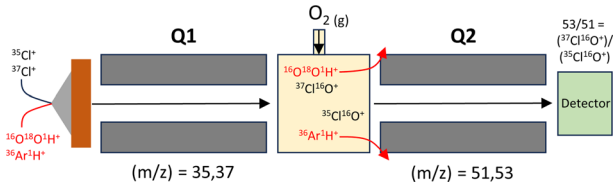


The KNW rutile—a natural reference material for microbeam U–Pb age and trace element determination

Jia Meng, Shitou Wu,* Hao Wang,* Yueheng Yang, Chao Huang, Chao Zhang, Wenqiang Yang, Jiarun Tu, Shuiyuan Yang, Qian Ma, Qian Wang, Lei Xu and Liewen Xie

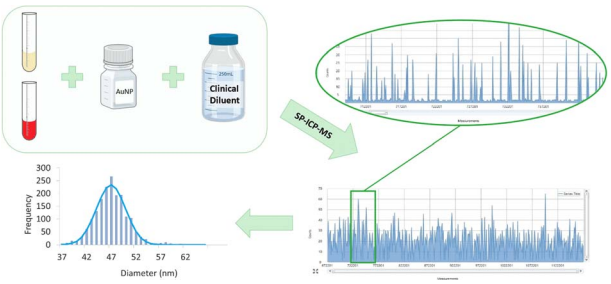
2502



Rapid and accurate determination of chlorine isotopic ratios with ICP-MS/MS using O_2 reaction gas

Tyler D. Schlieder,* Nicole D. Rocco, Maria Laura di Vacri, Isaac J. Arnquist, Danny Bottenus, Zachary Huber and Bruce McNamara

2508



Single particle ICP-MS: a tool for the characterization of gold nanoparticles in nanotheranostics applications

Meritxell Cabré, Gabriel Fernández, Esther González, Jordi Abellà and Ariadna Verdaguer*

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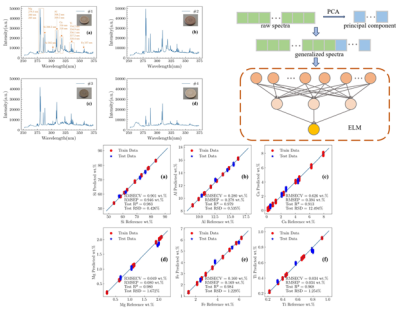

High-accuracy quantification of soil elements by laser-induced breakdown spectroscopy based on PCA-GS-ELM

Fanhua Qu, Haochen Li, Qifang Sun, Wanxiang Li, Yuchao Fu, Meizhen Huang and Tianyuan Liu*

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Lithium-ion batteries: direct solid sampling for characterisation of black mass recyclates using graphite furnace atomic absorption spectrometry

Maria Dommaschk,* Tim Sieber and Jörg Acker

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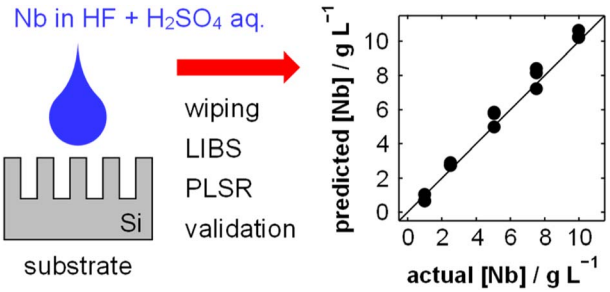
Quantitative analysis of niobium in electropolishing solution by laser-induced breakdown spectroscopy using porous silicon

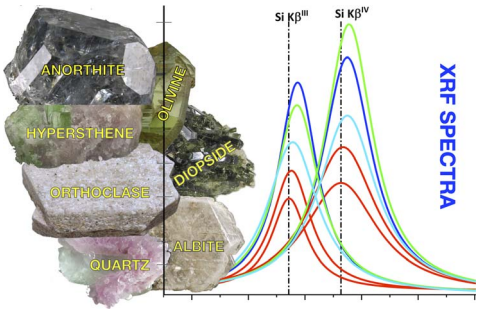
Ayumu Matsumoto,* Yuta Toyama, Yusuke Shimazu, Keisuke Nii, Yoshiaki Ida and Shinji Yae



2543

Novel application of silicon multi-vacancy satellite peaks for silicate minerals analysis in igneous rocks using WD-XRF coupled with chemometrics analysis

Ashok Kumar Maurya*



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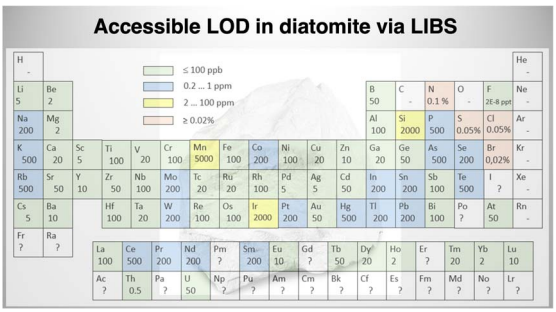
Quantification of impurities in diatomite *via* sensitivity-improved calibration-free laser-induced breakdown spectroscopy

Nabila Belkhir, Sid Ahmed Beldjilali,* Mohamed Amine Benelmouaz, Saad Hamzaoui, Anne-Patricia Alloncle, Christoph Gerhard and Jörg Hermann



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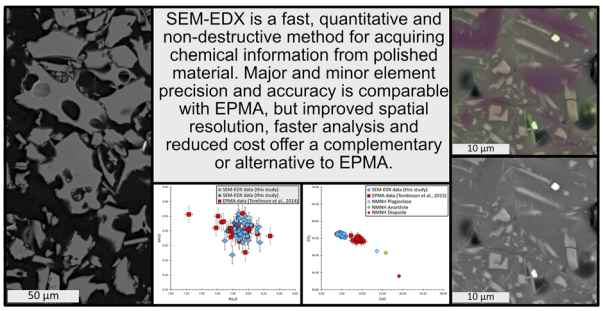
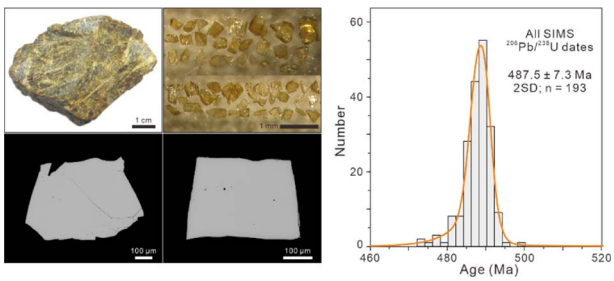


Optimizing SEM-EDX for fast, high-quality and non-destructive elemental analysis of glass

Paul C. Guyett,* David Chew, Vitor Azevedo, Lucy C. Blennerhassett, Carolina Rosca and Emma Tomlinson

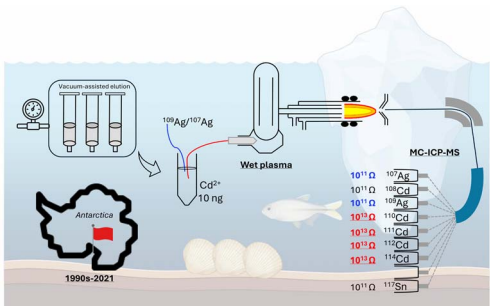
2580



Assessment of M6 monazite as a potential reference material for *in situ* microbeam analyses of U–Th–Pb geochronology and O–Nd isotopes

Zhi Chen, Li-Guang Wu, Xiao-Xiao Ling,* Jörn-Frederik Wotzlaw, Cyril Chelle-Michou, Yang Li, Zhen-Hui Hou, Wen-Lei Song, Qian Mao, Wen-Qiang Yang, Yu Liu, Guo-Qiang Tang, Jiao Li, Qiu-Li Li and Xian-Hua Li

2591



High-precision low-level Cd isotopic analysis using MC-ICP-MS and its application to marine samples from Terra Nova Bay (Antarctica)

Maria Alessia Vecchio, Lana Abou-Zeid, Marco Grotti and Frank Vanhaecke*

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