U.S. Department of Justice
Drug Enforcement Administration
Office of Forensic Sciences

SELECTED REFERENCES

The Selected References section is a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. Mailing address information duplicates that which is provided by the abstracting services.

Cadola L, Broseus J, Esseiva P. **Chemical profiling of different hashish seizures by gas chromatography-mass spectrometry and statistical methodology: A case report.** Forensic Science International 2013, Ahead of Print. [Editor's Notes: Presents the title study. Seven compounds showing high discrimination value were identified. Contact: Institut de Police Scientifique, School of Criminal Sciences, Batochime, University of Lausanne, Lausanne-Dorigny, SwitzerlandInstitut de Police Scientifique, School of Criminal Sciences 1015, Switzerland.]

Chang Y, Zhang C, Gao L. **Qualitative and quantitative analysis of methcathinone by LC/MS/MS method.** Huaxue Fenxi Jiliang 2013;22(3):51-53. [Editor's Notes: Presents the title analysis. This article is written in Chinese. Contact: Institute of Forensic Science Ministry of Public Security P.R.C, Beijing 100038, Peoples Republic of China.]

Chen H-X, Huang M-H, Zhang X-X. **Micellar electrokinetic chromatography analysis of tetrahydrogestrinone and related anabolic androgenic steroids.** Analytical Methods 2013;5(19):5019-5023. [Editor's Notes: The analytes included two endogenous steroids (testosterone and epitestosterone) and five synthetic steroids (methyltestosterone, nandrolone, gestrinone, dihydrogestrinone and tetrahydrogestrinone). PDA detection was utilized. Toxicological focus, but includes method development on standards. Contact: Beijing National Laboratory for Molecular Sciences, College of Chemistry, Peking University, Beijing 100871, Peoples Republic of China.]

Djozan D, Farajzadeh MA, Sorouraddin SM, Baheri T. **Determination of methamphetamine, amphetamine and Ecstasy by inside-needle adsorption trap based on molecularly imprinted polymer followed by GC-FID determination.** Microchimica Acta 2012;179(3-4):209-217. [Editor's Notes: Toxicological focus. Contact: Laboratory of Chromatography, Faculty of Chemistry, University of Tabriz, Tabriz, Iran.]

Doctor EL, McCord B. **Comparison of aggregating agents for the surface-enhanced Raman analysis of benzodiazepines.** Analyst 2013;138(20):5926-5932. [Editor's Notes: Eleven different benzodiazepines and metabolites were analyzed, including 1,2-triazolo-benzodiazepines and 1,4-benzodiazpines (none specified in the abstract). Toxicological focus. Contact: Department of Chemistry, Florida International University, Miami (zip code not provided).]

El-Didamony AM, Ali II. **Spectrofluorimetric and spectrophotometric analysis of two analgesic drugs in pharmaceutical formulations and biological fluids.** Journal of Forensic Sciences 2013;58(5):1322-1329. [Editor's Notes: The drugs were tramadol and morphine. Contact: Department of Chemistry, Faculty of Science, Zagazig University, Zagazig 44511, Egypt.]

El-Didamony AM, Khater HM, Ali II. **New sensitive bromatometric assay methods for the determination of four analgesic drugs in pharmaceutical formulations and biological fluids.** Journal of Pharmaceutical Education and Research 2013;4(1):54-63. [Editor's Notes: The title drugs were nalbuphine, naltrexone, morphine, and tramadol. Contact: Chemistry Department, Faculty of Science, Zagazig University, Zagazig 44519, Egypt.]

Ferreira CR, Wu L, Vogt FG, Bornancini ER, Cooks RG. **Fiducial markers for distribution of drug and excipient on tablet surfaces by Multimodal Desorption Electrospray Ionization - Mass Spectrometry (DESI-MS) imaging.** Analytical Letters 2013, Ahead of Print. [Editor's Notes: Presents the title study; applications include detection of pharmaceutical counterfeits. Contact: Department of Chemistry and Center for Analytical Instrumentation Development, Purdue University, West Lafayette, IN (zip code not provided).]

Forbes TP, Brewer TM, Gillen G. **Desorption Electro-Flow Focusing Ionization of explosives and narcotics for ambient pressure mass spectrometry.** Analyst 2013;138(19):5665-5673. [Editor's Notes: The technique's acronym is DEFFI. The "narcotics" included cocaine (no others were listed in the abstract). Contact: National Institute of Standards and Technology, Materials Measurement Science Division, Gaithersburg, MD (zip code not provided).]

Gross JH. **Direct Analysis in Real Time – A critical review on DART-MS.** Analytical and Bioanalytical Chemistry 2013, Ahead of Print. [Editor's Notes: A review; stated applications include illicit drugs on luggage, clothes, or bank notes. Contact: Institute of Organic Chemistry, Heidelberg University, Heidelberg 69120, Germany.]

Idris M, John C, Ghosh P, Shukla SK, Baggi TRR. **Simultaneous determination of methaqaulone, saccharin, paracetamol, and phenacetin in illicit drug samples by HPLC.** Journal of Analytical Science and Technology 2013;4(1-8):4/1-4/6. [Editor's Notes: Present the analysis of "illicit methaqualone samples" by RP-HPLC. Contact: Chemistry Division, Central Forensic Science Laboratory, Hyderabad, India.]

Kanu AB, Brandt SD, Williams MD, Zhang N, Hill HH. **Analysis of psychoactive cathinones and tryptamines by Electrospray Ionization Atmospheric Pressure Ion Mobility Time-of-Flight Mass Spectrometry.** Analytical Chemistry 2013;85(18):8535-8542. [Editor's Notes: Four cathinones (mephedrone, butylone, 4-Me-PPP, and 4-MEC) and five tryptamines (5-EtO-DPT, 5-EtO-DALT, 5-EtO-MIPT, 5-EtO-ALCHT, and 5-EtO-2MALET) were analyzed in less than 1 minute. Contact: Department of Chemistry, Winston-Salem State University, Winston-Salem, NC 27110.]

Leitch O, Anderson A, Kirkbride KP, Lennard C. **Biological organisms as volatile compound detectors: A review.** Forensic Science International 2013;232(1-3):92-103. [Editor's Notes: An overview and review; applications include illicit drugs (not specified in the abstract). Contact: National Centre for Forensic Studies, University of Canberra, Canberra ACT 2617, Australia.]

Lin L, Lv J, Ji Y, Feng J, Liu Y, Wang Z, Zhang W. **Characterization of barbiturates by infrared and Raman microscopy.** Analytical Letters 2013, Ahead of Print. [Editor's Notes: Infrared and confocal Raman microscopy were employed to characterize and discriminate barbital, phenobarbital, pentobarbital, amobarbital, secobarbital, butalbital, pentothal, and butabarbital. Contact: Northeast Petroleum University at Qinhuangdao, Qinhuangdao, Peoples Republic of China.]

Morelato M, Beavis A, Tahtouh M, Ribaux O, Kirkbride P, Roux C. **The use of organic and inorganic impurities found in MDMA police seizures in a drug intelligence perspective.** Science & Justice 2013, Ahead of Print. [Editor's Notes: Comparative analyses were conducted by GC/MS (however, the abstract did not detail how inorganic impurities were analyzed). Contact: Centre for Forensic Science, University of Technology, Sydney, Broadway, NSW, Australia.]

Nakazono Y, Tsujikawa K, Kuwayama K, Kanamori T, Iwata YT, Miyamoto K, Kasuya F, Inoue H. **Simultaneous determination of tryptamine analogues in designer drugs using gas chromatography-mass spectrometry and liquid chromatography-tandem mass spectrometry.** Forensic Toxicology 2013, Ahead of Print. [Editor's Notes: The analytes were trimethysilylated prior to analysis by GC/MS and LC-MS/MS. The abstract states 14 tryptamines were analyzed; however, only 5-methoxy-N,N-diethyltryptamine and 5-methoxy-N-methyl-N-isopropyltryptamine (which could not be separated) were specified. Appears to have a toxicological focus. Contact: National Research Institute of Police Science, Kashiwa 277-0882, Japan.]

Nelson MP, Basta A, Patil R, Klueva O, Treado PJ. **Development of a handheld widefield hyperspectral imaging (HSI) sensor for standoff detection of explosive, chemical and narcotic residues.** Proceedings of SPIE 2013;8726(Next-Generation Spectroscopic Technologies VI):872605/1-872605/9. [Editor's Notes: Presents the title study; applications include "locating production facilities of illegal drugs." Contact: ChemImage Sensor Systems, Pittsburgh, PA 15208.]

Nic Daeid N, Savage KA, Ramsay D, Holland C, Sutcliffe OB. **Development of gas chromatography-mass spectrometry (GC-MS) and other rapid screening methods for the analysis of 16 "legal high" cathinone derivatives.** Science & Justice 2013, Ahead of Print. [Editor's Notes: Analyses were conducted using "presumptive testing" (not specified in the abstract), TLC, and GC/MS. Contact: Centre for Forensic Science, Department of Pure and Applied Chemistry, 204 George Street, UK Centre for Forensic Science, University of Strathclyde, Glasgow G1 1XW 1XW, UK.]

Phattanawasin P, Sotanaphun U, Sukwattanasinit T, Akkarawaranthorn J, Kitchaiya S. **Quantitative determination of sibutramine in adulterated herbal slimming formulations by TLC-image analysis method.** Forensic Science International 2012;219(1-3):96-100. [Editor's Notes: Dragendorff reagent was used for spot detection. The image analysis method was compared against a TLC-densitometry method. Contact: Faculty of Pharmacy, Silpakorn University, Nakhon Pathom, Thailand.]

Sabin GP, Lozano VA, Rocha WFC, Romao W, Ortiz RS, Poppi RJ. **Characterization of sildenafil citrate tablets of different sources by near infrared chemical imaging and chemometric tools.** Journal of Pharmaceutical and Biomedical Analysis 2013;85:207-212. [Editor's Notes: Allows for detection of counterfeits. Contact: Institute of Chemistry, State University of Campinas, Campinas 13084-971, Brazil.]

Shevyrin V, Melkozerov V, Nevero A, Eltsov O, Shafran Y. **Analytical characterization of some synthetic cannabinoids, derivatives of indole-3-carboxylic acid.** Forensic Science International 2013;232(1-3):1-10. [Editor's Notes: Analyses conducted by GC-HRMS, UHPLC-HRMS, NMR, and FTIR. Compounds not specified in the abstract. Contact: Ural Federal University, Institute of Chemistry and Technology, Yekaterinburg 620002, Russia.]

Siroka J, Polesel DN, Costa JL, Lanaro R, Tavares MFM, Polasek M. **Separation and determination of chlorophenylpiperazine isomers in confiscated pills by capillary electrophoresis.** Journal of Pharmaceutical and Biomedical Analysis 2013;84:140-147. [Editor's Notes: With UV detection. Compounds were 1-(2-chlorophenyl) piperazine (oCPP), 1-(3-chlorophenyl)piperazine (mCPP) and 1-(4-chlorophenyl)piperazine (pCPP). The run buffer contained alpha-cyclodextrin. Contact: Institute of Chemistry, University of Sao Paulo, 05513-970 Brazil.]

Smith JP, Metters JP, Kampouris DK, Lledo-Fernandez C, Sutcliffe OB, Banks CE. **Forensic electrochemistry: The electroanalytical sensing of Rohypnol (flunitrazepam) using screen-printed graphite electrodes without recourse for electrode or sample pre-treatment.** Analyst 2013;138(20):6185-6191. [Editor's Notes: Includes a review of the literature on detection of flunitrazepam. The methodology can detect adulteration of beverages. Contact: Faculty of Science and Engineering, Division of Chemistry and Environmental Science, School of Chemistry and the Environment, Manchester Metropolitan University, Manchester, UK.]

Vani N, Mohan BM, Nagendrappa G. **A new high-performance thin-layer chromatographic method for determination of diazepam in spiked blood samples.** Journal of Planar Chromatography – Modern TLC 2013;26(4):343-348. [Editor's Notes: Presents the use of a new mobile phase for the separation of nitrazepam, clonazepam, lorazepam, chlordiazepoxide, alprazolam, clozapine, and diazepam. The methodology used densitometry and UV scanning. Toxicological focus. Contact: Forensic Science Laboratory, Bangalore 560 068, India.]

Zhai D, Agrawalla BK, Eng PSF, Lee S-C, Xu W, Chang Y-T. **Development of a fluorescent sensor for an illicit date rape drug - GBL.** Chemical Communications 2013;49(55):6170-6172. [Editor's Notes: Claimed to be "the first fluorescent sensor for GBL." Allows for detection of GBL in adulterated beverages. Contact: Department of Chemistry and MedChem Program, Life Sciences Institute, National University of Singapore, Singapore 117543.]

Zuba D, Sekula K. **Analytical characterization of three hallucinogenic N-(2-methoxy)benzyl derivatives of the 2C-series of phenethylamine drugs.** Drug Testing and Analysis 2013;5(8):634-645. [Editor's Notes: The title compounds were: 25D-NBOMe [2-(2,5-dimethoxy-4-methylphenyl)-N-(2-methoxybenzyl)ethanamine], 25E-NBOMe [2-(4-ethyl-2,5-dimethoxyphenyl)-N-(2-methoxybenzyl)ethanamine] and 25G-NBOMe [2-(2,5-dimethoxy-3,4-dimethylphenyl)-N-(2-methoxybenzyl)ethanamine]. Analyses included GC-EI-MS (both underivatized and after derivatization with trifluoroacetic anhydride), LC-ESI-QTOF-MS (and MS/MS), FTIR, and NMR. Contact: Department of Forensic Toxicology, Institute of Forensic Research, Krakow, Poland.]

Additional References of Possible Interest

Heyler RA, Carriere JTA, Havermeyer F. **THz-Raman accessing molecular structure with Raman spectroscopy for enhanced chemical identification, analysis and monitoring.** Proceedings of SPIE 2013;8726(Next-Generation Spectroscopic Technologies VI):87260J/1-87260J/7. [Editor's Notes: Introduces a new, inexpensive, and highly efficient approach to gathering ultra-low-frequency Stokes and anti-Stokes Raman spectra (referred to as "THz-Raman"); applications include "pharmaceuticals." The abstract specifically notes facile discrimination of polymorphs. Contact: Ondax Inc., Monrovia, CA 91016.]

Infrared and Raman Spectroscopy in Forensic Science. 2012, 618 pages. Chalmers, John M.; Edwards, Howell G. M.; Hargreaves, Michael D.; Editors. John Wiley & Sons Ltd.: Chichester, UK.