Ecstasy is a term typically used to describe drugs of abuse containing 3,4-methylenedioxymethamphetamine (MDMA). Recently, the trafficking of ecstasy tablets has grown and considerable higher amounts have been seized in Brazil. Herein, we present the development and validation of a $^1$H-qNMR (quantitative nuclear magnetic resonance of hydrogen) analytical forensic method capable both to identify and quantify MDMA in ecstasy tablets. Details are presented in the Article A Validated NMR Approach for MDMA Quantification in Ecstasy Tablets by Nathalia S. Almeida, Luiz E. C. Benedito, Adriano O. Maldaner and Aline L. de Oliveira on page 1944.

Communications

An Efficient Method for the Hydrolysis of Potassium Organotrifluoroborates Promoted by Montmorillonite K10

Renato L. Silva, Cosme S. Santos, Josãº A. M. Santos, Roberta A. Oliveira, Paulo H. Menezes and Juliano C. R. Freitas

Graphical Abstract

An efficient and non-expensive method for conversion of diverse potassium organotrifluoroborates to their corresponding boronic acids and boronic esters promoted by montmorillonite K10 using water as the reaction solvent is described.
Articles

1786  In vitro Analysis of the Interaction between Human Serum Albumin and Semi-Synthetic Clerodanes
Otávio A. Chaves, Áurea Echevarria, Andressa Esteves-Souza, Maria A. M. Maciel and José C. Netto-Ferreira

Graphical Abstract
The interaction between human serum albumin (HSA) and semi-synthetic clerodanes showing potential anti-cancer activity was evaluated by experimental and theoretical methods. The clerodanes derived from trans-dehydrocrotonin (t-DCTN), methyl-hydrazone (MHDCTN) and phenyl-hydrazone (PHDCTN), showed better binding ability than the natural product t-DCTN.

1796  Determination of Colchicine in Pharmaceutical Formulations and Urine by Multiple-Pulse Amperometric Detection in an FIA System Using Boron-Doped Diamond Electrode

Graphical Abstract
Selective, simple and fast determination of colchicine by multiple pulse amperometry coupled to flow injection analysis (FIA-MPA) system in pharmaceutical formulations and urine samples using a boron-doped diamond electrode.

1803  Microstructure by Thermal Attack under Vacuum of a Superduplex Stainless Steels and Electrochemical Behavior in H₂S/CO₂-Saturated Synthetic Seawater
Elki C. Souza, Carlos A. Fortulan and João M. D. A. Rollo

Graphical Abstract
Superduplex stainless steels composed in both equal fraction ferritic-austenite phases are applied as components for use in petrochemical industries in off-shore platforms and its corrosion resistance (due to the passive film on the surface) is dependent on the temperature and environment in which they are exposed.

1811  Palladium Nanoparticles within Core-Cross-Linked Polymer Gels for Suzuki Coupling Reactions: from Monomers to Ready-to-Use Catalysts in Two-Steps
Tanize Bortolotto, Gabrielly E. Neumann, Suelen G. Trindade, Laura C. E. da Silva, Oscar E. D. Rodrigues, Vanessa Schmidt and Cristiano Giacomelli

Graphical Abstract
Well-defined cross-linked polymeric structures behaving as highly hydrated unimolecular objects (polymer nanogels) are suitable capping agents for palladium nanoparticle catalyst systems. This structurally complex catalyst composite can be prepared in two-steps.
1823  Solid State Reaction of Serpentinite Mg$_3$Si$_2$O$_5$(OH)$_4$ with NaOH to Produce a New Basic Catalytic Phase Na$_2$Mg$_2$Si$_2$O$_7$ for Biodiesel Production
Gilvan M. Paz, Sara S. Vieira, Alexandre C. Bertoli, Fabiane C. Ballotin, Edmilson M. de Moura, Ana Paula C. Texeira, Demétrio A. S. Costa, Ottávio Carmignano and Rochel M. Lago

**Graphical Abstract**
The nature of the catalytic site is not clear, but one can consider that in the Na$_2$Mg$_2$Si$_2$O$_7$ structure is forming a species Si-O-Na$. One possible mechanism is the interaction of CH$_3$OH with the basic site Si-O-Na$^+$. 

1830  Optimization of Experimental Parameters in Analysis of Pharmaceutical Pellets by Near Infrared-Chemical Imaging (NIR-CI) and Multivariate Curve Resolution with Alternating Least Squares (MCR-ALS)
José Augusto Da-Col and Ronei J. Poppi

**Graphical Abstract**
In this study, the evaluation of multivariate curve resolution with alternating least squares (MCR-ALS) parameters was important for the analysis results of pharmaceutical pellets composition.

1842  Supramolecular Characterization of Humic Acids Obtained through the Bacterial Transformation of a Low Rank Coal
Nelson O. Valero, Liliana C. Gómez and Luz M. Melgarejo

**Graphical Abstract**
The characterization of humic acid (HA) obtained by activity of bacterial strains, that transform a low rank coal (LRC) lignite type and release humified organic matter (HOM), was compared with HA obtained by the traditional alkaline extraction method using 0.5 M NaOH (HA-NaOH).

1854  Seasonal and Spatial Distribution of Caffeine, Atrazine, Attenolol and DEET in Surface and Drinking Waters from the Brazilian Federal District
Fernando F. Sodré, Joyce S. Santana, Thiago R. Sampaio and Cristina C. S. Brandão

**Graphical Abstract**
This work shows the distribution of selected micropollutants in Paranoá Lake that receives effluents from the capital of Brazil and will be used to produce drinking water in order to avoid water scarcity. Source and drinking waters were also investigated.
1866 Volatile Profile of Sparkling Wines Produced with the Addition of Mannoproteins or Lees before Second Fermentation Performed with Free and Immobilized Yeasts

Gustavo P. Costa, Karine P. Nicoli, Juliane E. Welke, Vitor Manfroi and Claudia A. Zini

Graphical Abstract
The use of immobilized yeasts and aging on mannoproteins or lees seemed to be a promising treatment to achieve positive aroma notes in the volatile profile of sparkling wines.

1876 Immobilization of Burkholderia cepacia on Pristine or Functionalized Multi-Walled Carbon Nanotubes and Application on Enzymatic Resolution of (RS)-1-Phenylethanol

Michele R. G. Dias, Alysson de Paula veloso, Lilian F. M. do Amaral, Rhaísa T. Betim, Maria G. Nascimento and Cristiane Pilissão

Graphical Abstract
The systems Burkholderia cepacia lipase (BCL) on pristine or functionalized multi-walled carbon nanotubes (MWCNTs) resulted in a 3-fold improvement in the conversion and in a 5-fold improvement in ee (enantiomeric excess of the substrate), when compared with free BCL. The support was reused for eight cycles. An increase in the thermal stability of BCL was confirmed by thermogravimetric analysis (TGA).

1885 Application of Factorial Design and Desirability Function to Develop a Single Analytical Procedure for the Determination of Metals in Different Tissues of Blue Crab (Callinectes danae)

Daniel C. Lima, Wesley N. Guedes, Vinicius C. Costa and Fabio A. C. Amorim

Graphical Abstract
Graphical abstract shows the three studied tissues, the sequence of scientific work with relation to the investigation on single condition to prepare samples, analytical features, validation of analytical procedure and application.

1894 Synthesis and Optimization of Colloidal Hydroxyapatite Nanoparticles by Hydrothermal Processes

Thais M. Arantes, Lilian M. M. Coimbra, Fernando H. Cristovam, Tatiane M. Arantes, Gabriel M. Rosa and Luciano M. Lilão

Graphical Abstract
The smaller nanoparticles aggregate to form the nanorods by growth via the targeted binding mechanism.
1904  Direct Synthesis of Porous Carbon Materials Prepared from Diethyldithiocarbamate Metal Complexes and Their Electrochemical Behavior
Herculano V. da Silva, Arliza O. Porto, Cristiano C. Caliman, Rubens L. de Freitas Filho, Alexandre A. C. Cotta, Waldemar A. A. Macedo and Ana Paula C. Teixeira

Graphical Abstract
Porous carbon materials were prepared from Fe, Co and Ni diethyldithiocarbamate complexes. The effect of metallic center in the morphology of porous carbon structure and the electrochemical behavior of porous carbon materials were studied.

1917  Degradation of Aqueous Paraquat by Surface Air Plasma: A Kinetic Study
Camilo Fabris, Gabriele B. Baroncello and Péricles I. Khalaf

Graphical Abstract
The graphical abstract schematically shows the surface air plasma setup for aqueous paraquat degradation. The production of reactive nitrogen species (RNS) and the ionic strength effect on paraquat degradations are shown in detail on the graphs.

1927  Improving Antioxidant Activity of Ophioglossum thermale Kom. by Fermentation with Talaromyces purpurogenus M18-11
Jian-wei Dong, Le Cai, Xue-jiao Li, Rui-feng Mei, Ping Luo and Zhong-tao Ding

Graphical Abstract
Ophioglossum thermale Kom. was fermented with Talaromyces purpurogenus M18-11. T. purpurogenus is an effective strain to process O. thermale for improving the antioxidant activity.

1934  Burkholderia thailandensis: the Main Bacteria Biodegrading Fipronil in Fertilized Soil with Assessment by a QuEChERS/GC-MS Method

Graphical Abstract
A QuEChERS/GC-MS method was essential to quantitate the biological degradation of fipronil in soil fertilized with humic substances. We isolated more than two-dozens of microorganisms from such soil, and the most abundant, Burkholderia thailandensis, showed the capability to degrade fipronil into active metabolites.
1944  A Validated NMR Approach for MDMA Quantification in Ecstasy Tablets

Nathalia S. Almeida, Luiz E. C. Benedito, Adriano O. Maldaner and Aline L. de Oliveira

**Graphical Abstract**

An internal standard $^1$H-qNMR (quantitative nuclear magnetic resonance) method was developed and validated for simple, accurate and fast quantification of 3,4-methylenedioxymethamphetamine (MDMA) in seized ecstasy tablets.

---

1951  The Chemical Composition of Winter Fogs at São Paulo Highway Sites

Pérola C. Vasconcellos, Fábio L. T. Gonçalves, Simone G. Avila, Vitor K. Censon and Heidi Bauer

**Graphical Abstract**

Fog sampler, an equipment used to collect fog samples at 2 roads in São Paulo City. Collected droplets coalesce and run down the strands, aided by gravity and aerodynamic drag, into a Teflon® sample trough.

---

1959  Sub-Minute Method for Determination of Naphazoline in the Presence of Diphenhydramine, Pheniramine or Chlorpheniramine by Capillary Electrophoresis

Michelle M. A. C. Ribeiro, Mariana C. Marra, Brenda M. C. Costa, Thiago C. Oliveira, Alex D. Batista, Rodrigo A. A. Muñoz and Eduardo M. Richter

**Graphical Abstract**

This work presents a simple and low-cost capillary electrophoresis (CE) method for ultra-fast (< 1 min) simultaneous determination of naphazoline in the presence of diphenhydramine or pheniramine or chlorpheniramine.

---

1965  Surface Modification of Poly(GMA-co-EDMA-co-MMA) with Resorcarenes

Alver A. Castillo-Aguirre, Betty A. Velásquez-Silva, Cindy Palacio, Frank Báez, Zuly J. Rivera-Monroy and Mauricio Maldonado

**Graphical Abstract**

Regioselective modification of poly(2,3-epoxypropyl methacrylate-co-ethylene glycol dimethacrylate-co-methyl methacrylate) (poly(GMA-co-EDMA-co-MMA)) with resorcarenes.
Optimization and Validation of an Extraction Method for Evaluating the Availability of Cu, Zn, Mn, Ni, Cr and Cd in Soil with the Use of the Mehlich-1 Extractor

Gesiara F. Silva, Marília B. Galuch, Alessandro F. Martins, Danielle G. O. Prado, Jesuí V. Visentainer and Elton G. Bonafé

Graphical Abstract

Determination of the total amount of heavy metals present in soils is not a good index to estimate the bioavailability and toxicity of these elements. This work describes the use of the Mehlich-1 extractor for evaluating the availability of Cu, Zn, Mn, Ni, Cr and Cd in soil.