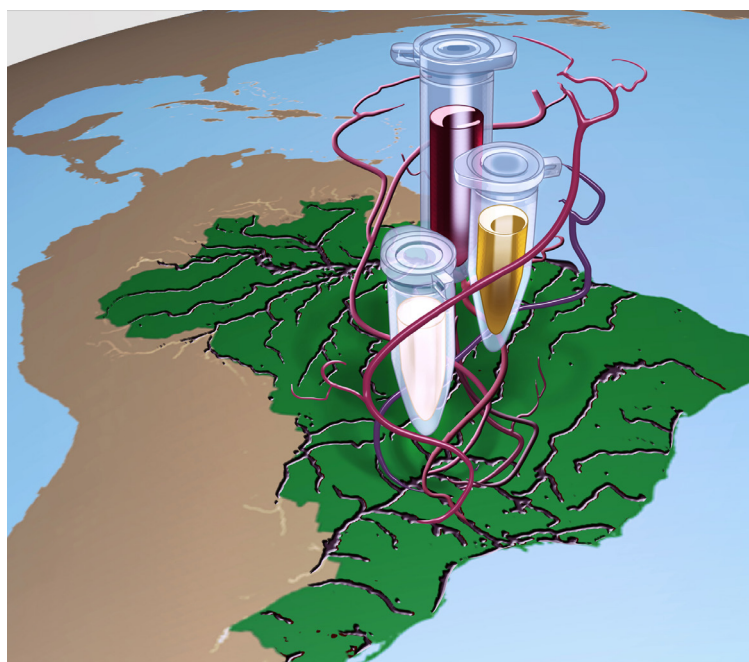


Cover Picture



The need to attain high throughput analysis of small molecules by liquid chromatography (LC) in a variety of bioanalytical scenarios is usually associated to higher LC efficiency. Although this is a premise, the sample clean-up step is always the bottleneck. This review encompasses the Brazilian researches efforts in achieving high-efficient LC analysis with greener sample preparation approaches. Enhanced sensitivity with cleaner samples affording less chemical and biological residues are usually the main goal of the method procedure herein discussed. Details are presented in the Article **New Trends in Sample Preparation in Brazil: an Overview of Bioanalytical Applications by Liquid Chromatography** by *Neila M. Cassiano, Juliana C. Barreiro and Quezia B. Cass* on page 9.

Contents

Editorial

1 Coming Soon

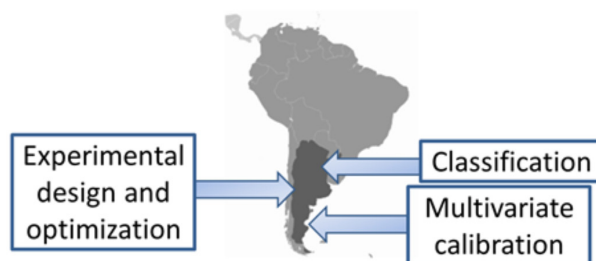
Account

5 Chemometrics in Argentina: the Result of Unplanned Events

Alejandro C. Olivieri

Graphical Abstract

The origins and current status of chemometric research in Argentina are described, including references to works in the three main areas of interest: experimental design and optimization, classification and multivariate calibration



Review

9 New Trends in Sample Preparation in Brazil: an Overview of Bioanalytical Applications by Liquid Chromatography

Neila M. Cassiano, Juliana C. Barreiro and Quezia B. Cass

Graphical Abstract

Direct sample injection systems, an excellent approach for green chromatography



Articles

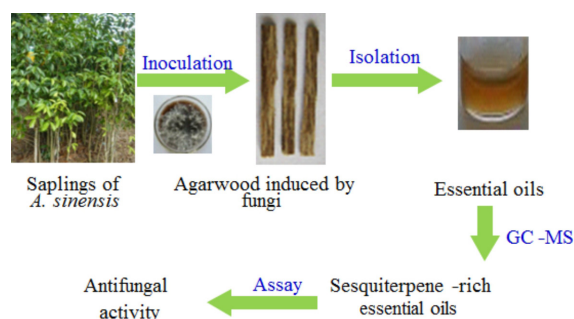
20 Compositions and Antifungal Activities of Essential Oils from Agarwood of *Aquilaria sinensis* (Lour.) Gilg Induced by *Lasiodiplodia theobromae* (Pat.) Griffon. & Maubl

SI online

Zheng Zhang, Xiao-min Han, Jian-he Wei, Jian Xue, Yun Yang, Liang Liang, Xiu-jin Li, Qing-mei Guo, Yan-hong Xu and Zhi-hui Gao

Graphical Abstract

The results show that the essential oil obtained from the agarwood originating from *A. sinensis* induced by a fungal-inoculation method had a high similarity to wild agarwood, both in chemical composition and in antimicrobial activity. This is the first report of the analysis of essential oils from fungal-inoculation induced agarwood

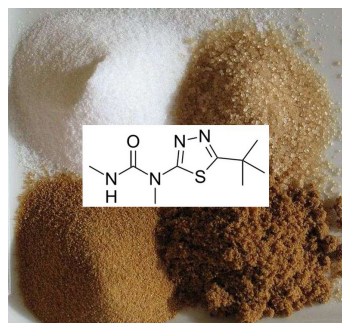


27 New Voltammetry-Based Technique for the Determination of Tebuthiuron in Crystal and Brown Sugar Samples

Andiara P. de Assis, Leonardo L. Okumura, Adelar A. Sacz and Marcelo F. de Oliveira

Graphical Abstract

This paper proposes a reliable method to analyze the herbicide tebuthiuron (TBH) in sugar matrixes (brown and crystal) using square wave voltammetry (SWV) and differential pulse voltammetry (DPV) at bare glassy carbon electrode

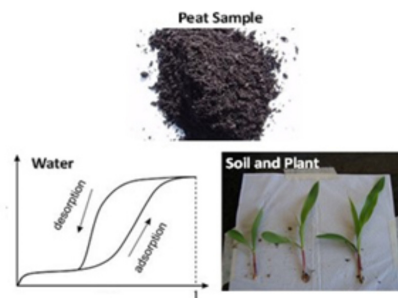


36 Enrichment of Tropical Peat with Micronutrients for Agricultural Applications: Evaluation of Adsorption and Desorption Processes

Camila de A. Melo, Lilian K. de Oliveira, Danielle Goveia, Leonardo F. Fraceto and André H. Rosa

Graphical Abstract

Peat is very rich in organic matter, and is therefore able to both adsorb and release micronutrients. This desorption of micronutrients, together with the presence of organic matter, assists the development of plants



50 Evaluating Sedimentation Rates in the Estuary and Shelf Region of the Paraíba do Sul River, Southeastern Brazil

Cristiana V. A. Wanderley, José Marcus Godoy, Maria Luíza D. P. Godoy, Carlos Eduardo Rezende, Luiz D. Lacerda, Isabel Moreira and Zenildo L. Carvalho

Graphical Abstract

Aerial view of the Paraíba do Sul River delta region and the Atafona village

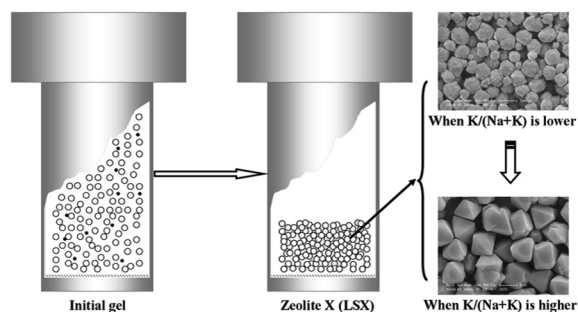


65 Effects of Na and K ions on the Crystallization of Low-silica X Zeolite and its Catalytic Performance for Alkylation of Toluene with Methanol

Haitao Hui, Junhua Gao, Gencun Wang, Ping Liu and Kan Zhang

Graphical Abstract

The crystallization of low-silica X zeolite (LSX) was studied in Na-K gel systems with different extents of replacement of Na by K while fixed content of other components. The molar ratio of K/(Na+K) affects the crystallization, composition and catalytic performance of final LSX products

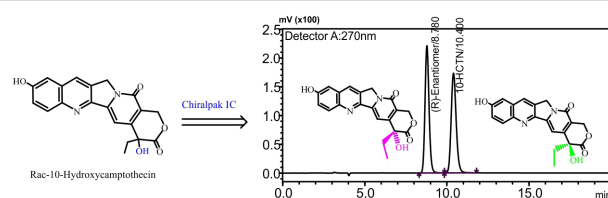


75 The Development and Validation of a Chiral High Performance Liquid Chromatography Method for the Identification and Quantification of (R)-Enantiomer in 10-Hydroxycamptothecin

A. Venkateshwarlu, A. V. Rama Rao, Mukkanti Khagga and S. V. Subba Reddy

Graphical Abstract

A new, simple, rapid and accurate chiral HPLC method has been developed and validated for the enantiomeric separation and quantitative determination of the isomers of human colon cancer therapeutic drug 10-Hydroxycamptothecin

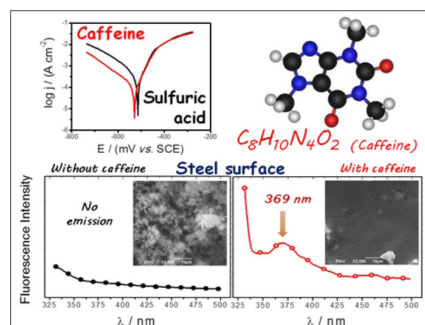


81 Assessment of Caffeine Adsorption onto Mild Steel Surface as an Eco-Friendly Corrosion Inhibitor

Fernando S. de Souza, Reinaldo S. Gonçalves and Almir Spinelli

Graphical Abstract

The eco-friendly compound caffeine effectively inhibited steel corrosion in acid medium by virtue of adsorption. The adsorption was consistent with the Frumkin adsorption isotherm. A hydrophobic protective film covered the steel surface

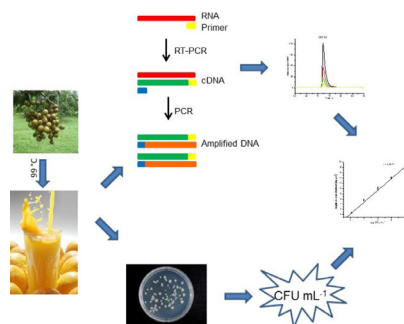


91 A Comparison of Plating and Reverse Transcriptase Polymerase Chain Reaction Followed by Microchip Electrophoresis for the Inactivation of *Alicyclobacillus acidoterrestris* Using Saponin

Juliana V. Alberice, Maribel E. Funes-Huacca and Emanuel Carrilho

Graphical Abstract

Experiments were performed using plating and reverse transcriptase polymerase chain reaction followed by microchip electrophoresis to assess the inactivation of *Alicyclobacillus acidoterrestris* using saponin. The results from both approaches were compared



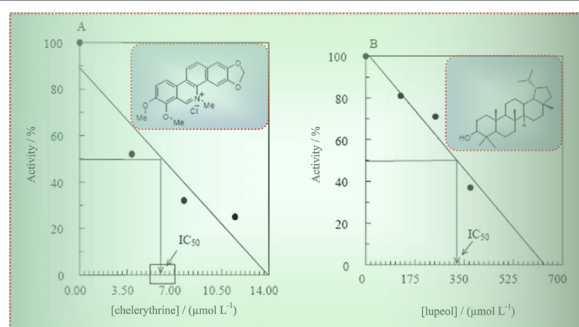
98 Inhibitory and Enzyme-Kinetic Investigation of Chelerythrine and Lupeol Isolated from *Zanthoxylum rhoifolium* Against Krait Snake Venom Acetylcholinesterase

SI online

Mustaq Ahmad, Andréia D. Weber, Graciane Zanon, Luciana de C. Tavares, Vinicius Ilha, Ionara I. Dalcol and Ademir F. Morel

Graphical Abstract

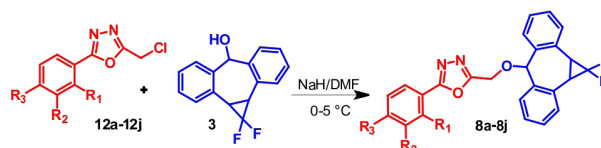
In this study, chelerythrine and lupeol isolated from *Zanthoxylum rhoifolium* were evaluated in vitro against the enzyme acetylcholinesterase (AChE) from the venom of the snake *Bungarus sindanus*. The alkaloid chelerythrine presented higher activity than did triterpene lupeol



104 Synthesis and Antimicrobial Properties of 1,3,4-Oxadiazole Analogs Containing Dibenzosuberane Moiety

SI online

Manjunath Moger, Vijay Satam, Darshan Raj C. Govindaraju, Paniraj A. S., Vadiraj S. Gopinath, Rama Mohan Hindupur and Hari N. Pati



Graphical Abstract

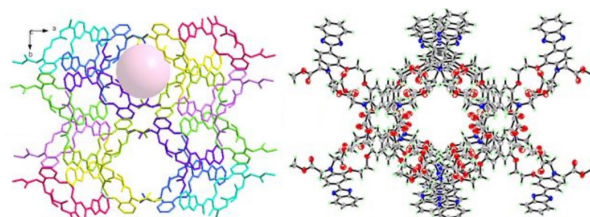
Ten analogs of 1,3,4-oxadiazole containing dibenzosuberane moiety (8a-8j) were synthesized, characterized and evaluated for antibacterial as well as antifungal activity

112 Structural Study and Fluorescent Property of a Novel Organic Microporous Crystalline Material

Zhao Cheng, Bingqin Yang, Meipan Yang and Binglin Zhang

Graphical Abstract

[(2-{2-[2-(Bis-methoxycarbonylmethylamino)phenoxy]ethoxy}-4-benzimidazole-phenyl)methoxycarbonylmethylamino]acetic acid methyl ester, schematic representation (left) and crystal packing to demonstrate the void cage along the c axis (right)



119 Fractionation of Aquatic Humic Substances and Dynamic of Chromium Species in an Aquatic Body Influenced by Sugarcane Cultivation

Amanda M. Tadini, Altair B. Moreira and Márcia C. Bisinoti

Graphical Abstract

In the present work was evaluated the influence of AHS obtained from an area under sugarcane cultivation on the dynamics of chromium species (Cr (III) and Cr (VI)) in the environment

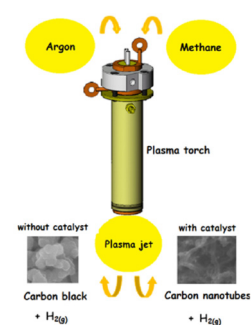


126 Plasma-Assisted Production of Carbon Black and Carbon Nanotubes from Methane by Thermal Plasma Reform

Vanessa Z. Baldissarelli, Luís Otávio de B. Benetoli, Felipe A. Cassini, Ivan G. de Souza and Nito A. Debacher

Graphical Abstract

A plasma process for carbon black and carbon nanotubes synthesis is presented. The decomposition of methane by thermal plasma generating hydrogen and carbon is proposed as an environmentally-friendly alternative to conventional methods. The main advantage of this process is that the carbon is obtained directly from methane without the formation of by-products

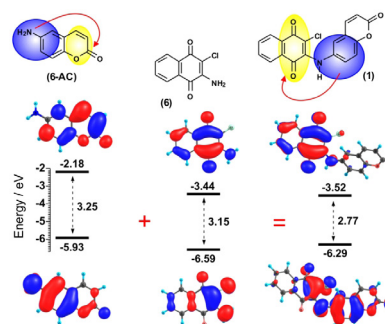


133 6-Aminocoumarin-Naphthoquinone Conjugates: Design, Synthesis, Photophysical and Electrochemical Properties and DFT Calculations

Fabio S. Miranda, Célia M. Ronconi, Mikaelly O. B. Sousa, Gleiciani Q. Silveira and Maria D. Vargas

Graphical Abstract

TD-DFT calculations of the ground (S_0) and excited (S_1) states suggest that in 6-aminocoumarin-naphthoquinone conjugates the fluorescent 6-AC donates electrons to the naphthoquinone LUMO resulting in an oxidative photoinduced electron transfer (oxidative-PET)

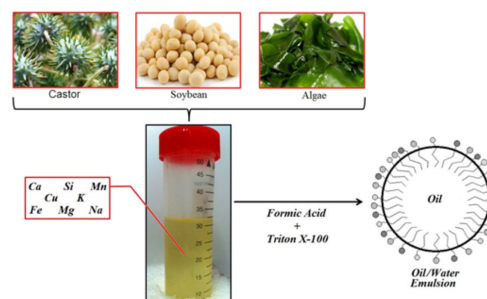


143 An Easy and Fast Procedure for the Determination of Ca, Cu, Fe, Mn, Mg, Na, K and Si in Biodiesel by ICP OES Using Emulsification as Sample Preparation Strategy

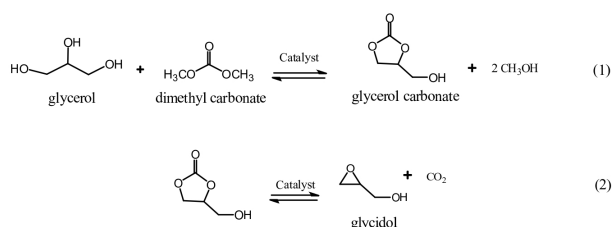
Meibel T. Lisboa, Caroline D. Clasen, Daiane C. de Sousa Vellar, Eliézer Q. Oreste, Tatiana D. Saint'Pierre, Anderson S. Ribeiro and Mariana A. Vieira

Graphical Abstract

This paper presents a procedure based on emulsification with formic acid and Triton X-100 for the determination of Ca, Cu, Fe, Mn, Mg, Na, K and Si in biodiesel samples by ICP OES



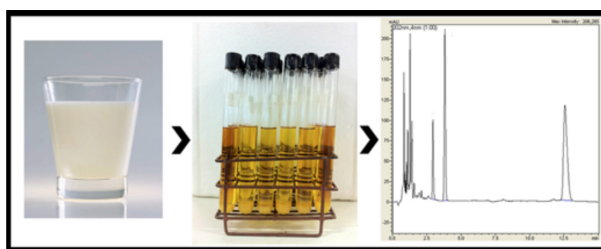
- 152 Synthesis of Glycerol Carbonate by Transesterification of Glycerol and Dimethyl Carbonate over $\text{KF}/\gamma\text{-Al}_2\text{O}_3$ Catalyst**
 Zhenmin Liu, Junwei Wang, Maoqing Kang, Ning Yin,
 Xinkui Wang, Yisheng Tan and Yulei Zhu



Graphical Abstract

A series of $\text{KF}/\gamma\text{-Al}_2\text{O}_3$ catalysts were prepared and used for the synthesis of glycerol carbonate from glycerol and dimethyl carbonate. Glycidol, the main by-product, resulted from the decomposition of glycerol carbonate

- 161 Method Validation for Simultaneous Determination of Cholesterol and Cholesterol Oxides in Milk by RP-HPLC-DAD**
 Luciana C. Bauer, Débora de A. Santana,
 Marianne dos S. Macedo, Alexandre G. Torres,
 Nilson E. de Souza and Julliana I. Simionato



Graphical Abstract

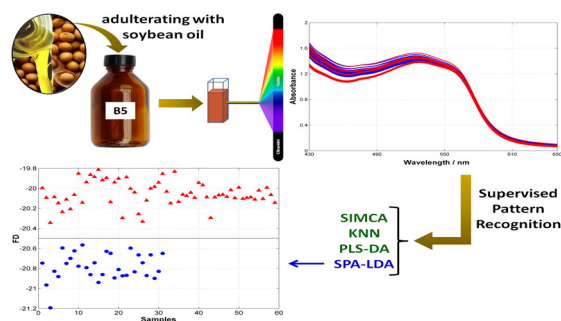
This study describes a method for determination of cholesterol oxides in milk by direct sample saponification - extraction and RP - HPLC - DAD

Short Reports

- 169 UV-Vis Spectrometric Detection of Biodiesel/Diesel Blend Adulterations with Soybean Oil**
 David D. S. Fernandes, Adriano A. Gomes, Marcelo M. de Fontes,
 Gean B. da Costa, Valber E. de Almeida, Mario C. U. de Araújo,
 Roberto K. H. Galvão and Germano Vêras



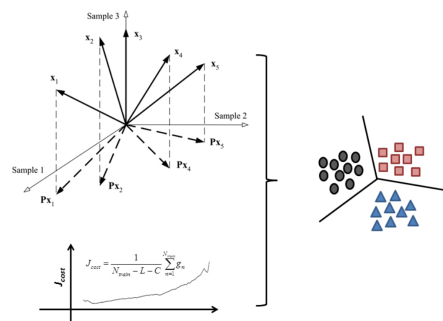
SI online



Graphical Abstract

A simple UV-Vis spectrometric method is proposed to detect adulterations of diesel/biodiesel blends with soybean oil. Suitable results were obtained by using four multivariate classification techniques (SIMCA, KNN, PLS-DA and SPA-LDA)

- 176 A New Validation Criterion for Guiding the Selection of Variables by the Successive Projections Algorithm in Classification Problems**
 Sófacles F. C. Soares, Roberto K. H. Galvão,
 Márcio J. C. Pontes and Mário C. U. Araújo



Graphical Abstract

A new criterion is proposed to guide the selection of variables for linear discriminant analysis (LDA) in the successive projections algorithm (SPA). The advantages of the proposed approach are demonstrated in three classification problems