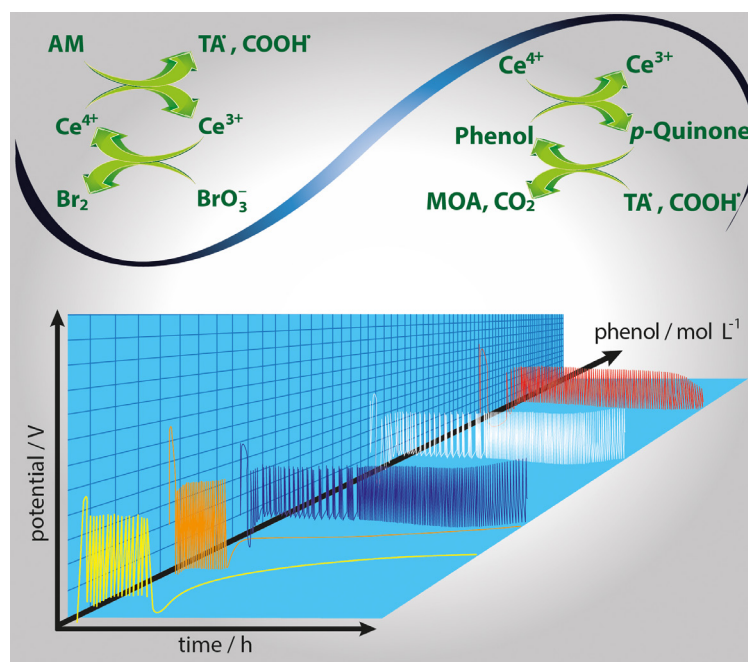


## Cover Picture



Phenol added to the classical Belousov-Zhabotinsky reaction drives a bifurcation from regular oscillations to a transient bursting phenomena. It was explained as a complex process that involves a kinetic competition between an aromatic redox cycle of phenolic compounds and the Ce<sup>4+</sup>/Ce<sup>3+</sup> catalytic cycle of the BZ classic oscillato. Details are presented in the Article **Bursting in the Belousov-Zhabotinsky Reaction Added with Phenol in a Batch Reactor** by Ariel Cadena, Daniel Barragán and Jesús Ágreda on page 2028.

## Contents

### Editorial

- 1887 **A New Generation of Chemist Leaders for a Chemistry without Borders**  
 Rochel Lago, Ana Lucia Americano Barcelos Souza, Aluir Purceno and  
 Flávia Gontijo

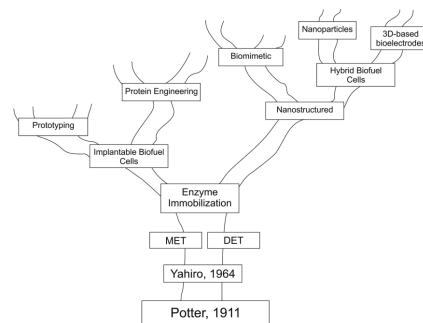
## Review

### 1891 New Energy Sources: The Enzymatic Biofuel Cell

Sidney Aquino Neto and Adalgisa R. De Andrade

#### Graphical Abstract

This review aims to provide the readers of the Journal of the Brazilian Chemical Society with an overview of enzymatic biofuel cells, their development since their first description in 1964, and the most recent outcomes. The latest papers in this field (including implantable technology) and an outlook for future research in this area are also presented



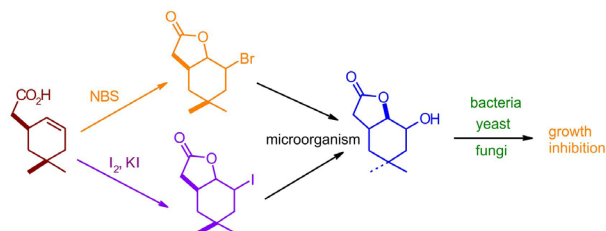
## Articles

### 1913 Antimicrobial Activity of Hydroxylactone obtained by Biotransformation of Bromo- and Iodolactone with Gem-Dimethylcyclohexane Ring



SI online

Małgorzata Grabarczyk, Wanda Mączka, Katarzyna Wińska, Barbara Żarowska and Mirosław Anioł



#### Graphical Abstract

Two lactones ( $\delta$ -bromo- $\gamma$ -lactone and  $\delta$ -iodo- $\gamma$ -lactone) obtained from  $\gamma,\delta$ -unsaturated acid were transformed by hydrolytic dehalogenation carried out by filamentous fungi into hydroxylactone. This hydroxylactone inhibited growth of some microorganisms

### 1920 Thermodynamics of Biodiesel: Combustion Experiments in the Standard Conditions and Adjusting of Calorific Values for the Practically Relevant Range (273 to 373) K and (1 to 200) bar

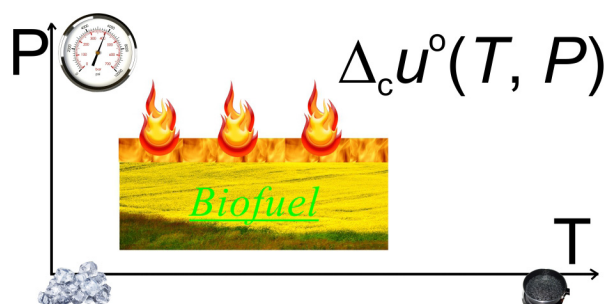


SI online

Dzmitry H. Zaitsau and Sergey P. Verevkin

#### Graphical Abstract

Calorific values of (RME) and (SME) biodiesel blends have been determined.  $T$  and  $P$  dependences of the calorific values in the range (273 to 373) K and (1 to 200) bar have been derived



### 1926 Cyclodipeptides from Metagenomic Library of a Japanese Marine Sponge

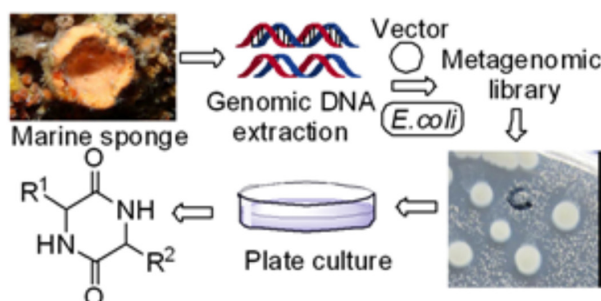


SI online

Rui He, Bochu Wang, Toshiyuki Wakimoto, Manyuan Wang, Liancai Zhu and Ikuro Abe

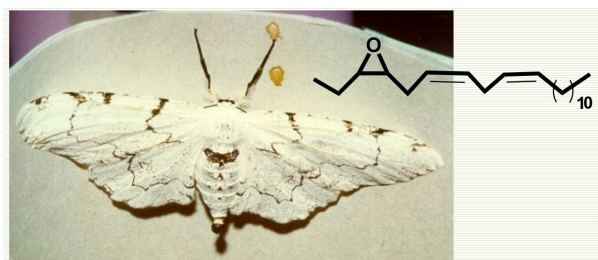
#### Graphical Abstract

Eleven cyclodipeptides were heterogeneously expressed in plate culture of an antibacterial clone functionally screened from metagenomic library of Japanese marine sponge *D. calyx*. These cyclodipeptides, two of them containing D-proline residue despite non-NRPS products, were firstly reported from metagenomic library



**1933 Studies towards the Identification of the Sex Pheromone of *Thyrineina arnobia***

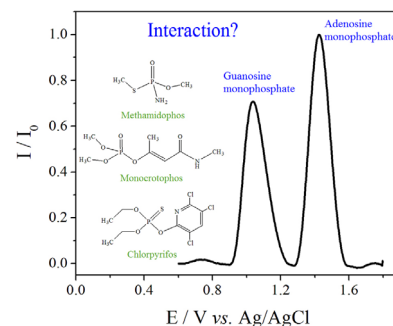
Jardel A. Moreira, Tiago Neppe, Marcelo M. de Paiva,  
 Anna M. Deobald, Luciane G. Batista-Pereira,  
 Marcio W. Paixão and Arlene G. Corrêa


**Graphical Abstract**

We have investigated the sex pheromone composition of the eucalyptus brown-looper and developed an efficient asymmetric synthesis for the four stereoisomers of 3,4-epoxy-6,9-heneicosadiene, possible major pheromone component

**1942 Interaction of Organophosphorus Pesticides with DNA Nucleotides on a Boron-Doped Diamond Electrode**

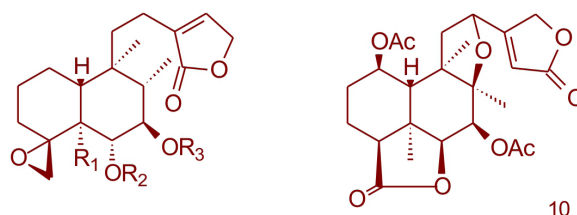
Gustavo S. Garbellini, Carolina V. Uliana and  
 Hideko Yamanaka


**Graphical Abstract**

Boron-doped diamond electrode was used to evaluate the interaction of the DNA nucleotides guanosine monophosphate and adenosine monophosphate with the organophosphorus pesticides methamidophos, monocrotophos and chlorpyrifos

**1950 New *neo*-Clerodanes from *Tinnea antiscorbutica* Welv.**

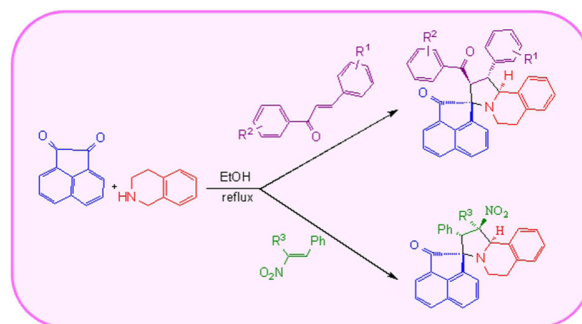
Cristina M. P. Borges, Dina I. M. D. de Mendonça, Sandra C.  
 S. Pinheiro, Liliana Vieira, António J. G. Mendonça, Jorge F.  
 Gaspar, Célia Martins, Carlos Diakanawma and José Rueff


**Graphical Abstract**

Three new *neo*-clerodanes, antiscorbuticane A, B and C, and seven known compounds were isolated from the methanol extract of *Tinnea antiscorbutica*. Antiscorbuticane B exhibited no mutagenic activity and did not induce micronucleus formation in the V79 cell line

**1957 A Facile Regioselective Synthesis of Novel Spiroacenaphthene Pyrroloisoquinolines Through 1,3-Dipolar Cycloaddition Reactions**

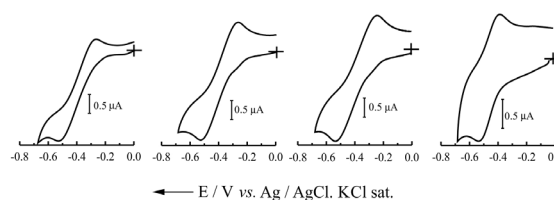
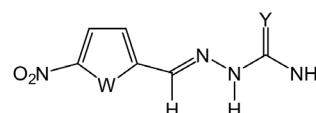
Yaghoub Sarrafi, Asieh Asghari, Mahshid Hamzehloueian,  
 Kamal Alimohammadi and Marzieh Sadatshahi


**Graphical Abstract**

A new series of spiroacenaphthene pyrroloisoquinolines were synthesized by one-pot, three component condensation of azomethine ylides, generated from 1,2,3,4-tetrahydroisoquinoline with acenaphthenequinone by a 1,5-prototropic shift route, with chalcone and nitrostyrene derivatives in a regio- and stereoselective manner

**1964 Nitrofurazone and its Nitroheterocyclic Analogues: a Study of the Electrochemical Behavior in Aqueous Medium**

Charles de Lima Brito, Gustavo Henrique Goulart Trossini,  
 Elizabeth Igne Ferreira and Mauro Aquiles La-Scalea


**Graphical Abstract**

The electrochemical reduction of nitrofurazone and its analogues was studied by cyclic voltammetry, differential pulse voltammetry and chronoamperometry in aqueous medium by using a glassy carbon electrode. The nitro anion radical was generated electrochemically and undergoes a disproportionation chemical reaction. The nitro anion radical obtained using the nitrothiophene thiosemicarbazone (NTS) analogue was significantly more stable than the one from nitrofurazone

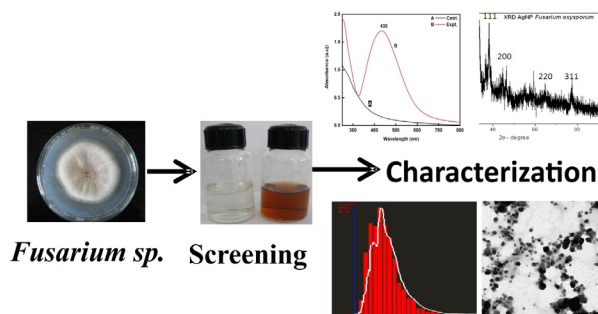
**1974 Screening of Different *Fusarium* Species to Select Potential Species for the Synthesis of Silver Nanoparticles**

Swapnil C. Gaikwad, Sonal S. Birla, Avinash P. Ingle, Aniket K. Gade, Priscyla D. Marcato, Mahendra Rai and Nelson Duran

SI online

**Graphical Abstract**

Biological synthesis of metal nanoparticles using fungi has been proved to be eco-friendly, economical and green approach. In the present study, different *Fusarium* species were screened to select an efficient species for the synthesis of silver nanoparticles



*Fusarium* sp. Screening

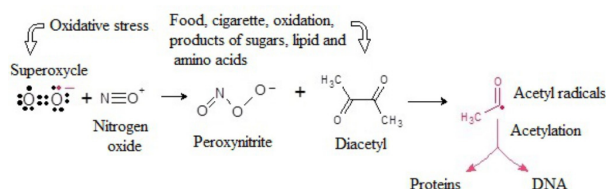
**1983 Electrospray Ionization Mass Spectrometry Applied to Study the Radical Acetylation of Amino Acids, Peptides and Proteins**

Atecla N. L. Alves, Leticia D. L. Jedlicka, J lio Massari, Maria A. Juliano, Etelvino J. H. Bechara and Nilson A. Assun o

SI online

**Graphical Abstract**

The species generated by oxidative stress combined with endogenous and exogenous compounds to promote changes in DNA and proteins, triggering various pathologies



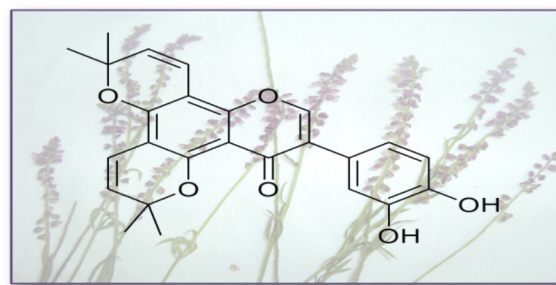
**1991 PAMPA Permeability, Acetylcholinesterase Inhibition and Antioxidant Activity of Pyranoisoflavones from *Polygala molluginifolia* (Polygalaceae)**

Dalila Venzke, Francieli K. Carvalho, Ana P. Ruani, Aldo S. Oliveira, In s M. C. Brighente, Gustavo A. Micke, Anderson Barison and Moacir G. Pizzolatti

SI online

**Graphical Abstract**

One new pyranoisoflavone and three known pyranoisoflavones, together with rutin and sucrose, were isolated from *Polygala molluginifolia* and evaluated for their acetylcholinesterase inhibition, antioxidant activity and PAMPA permeability

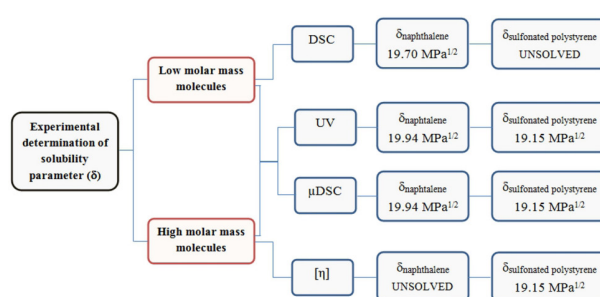


**1998 Determining Hildebrand Solubility Parameter by Ultraviolet Spectroscopy and Microcalorimetry**

Suzanny P. Carvalho, Elizabete F. Lucas, Gaspar Gonz lez and Luciana S. Spinelli

**Graphical Abstract**

Comparative results obtained by different methods for experimental determination of solubility parameter ( $\delta$ ) of low and high molar mass molecules. UV-Vis and  $\mu$ DSC were suitable to measure  $\delta$  for a wide molar mass range

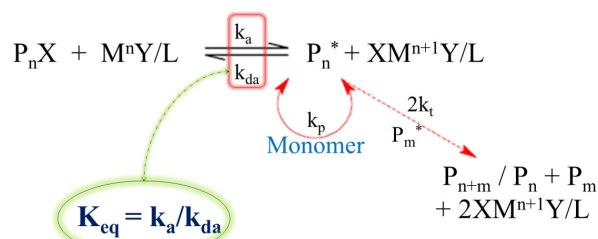


**2008 Simulation of the Equilibrium Constant Effect on the Kinetics and Average Properties of Polystyrene Obtained by ATRP**

Roni  rik P. Vieira, Andr  ia Ossig, Jana  ina M. Perez,  
Vin  cius G. Grassi, Cesar L. Petzhold, Augusto Peres,  
Jo  o M. Costa and Liliane M. F. Lona

**Graphical Abstract**

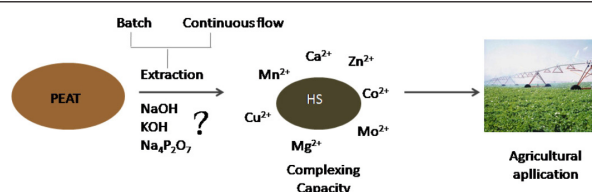
The general reaction mechanism of a typical atom transfer radical polymerization (ATRP) and the definition of equilibrium constant.  $P_nX$  is the "dormant" polymer,  $M^nY/L$  is the catalytic system,  $P_n^*$  is the "living" polymer and  $P_{n+m} / P_n + P_m$  are the "dead" polymers


**2015 Influence of the Extractant on the Complexing Capacity of Humic Substances from Peat for Macro and Micronutrients Using Continuous Flow: Agricultural Application and Environmental Impacts**

Wander G. Botero, Luciana C. Oliveira, Alexandre D. M. Cavagis,  
Andre H. Rosa, Julio C. Rocha and Ademir Santos

**Graphical Abstract**

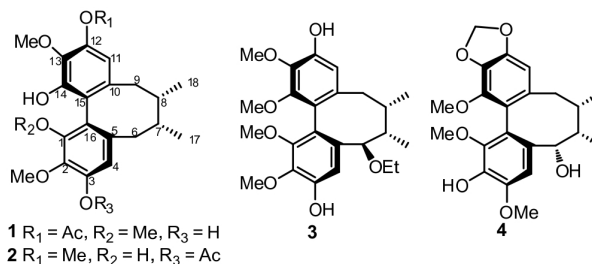
The influence of the type of extractor and extracting humic substances from peat for agricultural application and environmental impacts


**2021 Novel Bioactive Dibenzocyclooctadiene Lignans from *Schisandra neglecta***

Xue-Mei Gao, De-Yun Niu, Chun-Yang Meng, Fu-Quan Yao,  
Bin Zhou, Rui-Rui Wang, Liu-Meng Yang, Yong-Tang Zheng,  
Qiu-Fen Hu, Han-Dong Sun and Wei-Lie Xiao

**Graphical Abstract**

The structures of four new dibenzocyclooctadiene lignans isolated from the stems of *Schisandra neglecta* were elucidated by spectroscopic methods. These compounds showed moderate anti-HIV-1 activities and weak cytotoxic activities for some selected cell lines

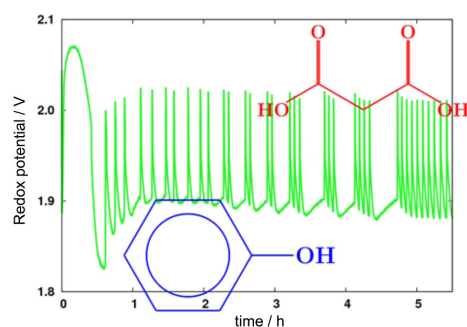

**2028 Bursting in the Belousov-Zhabotinsky Reaction Added with Phenol in a Batch Reactor**

Ariel Cadena, Daniel Barrag  n and Jes  s   greda

SI online

**Graphical Abstract**

The classical Belousov-Zhabotinsky oscillating reaction, in a batch reactor added with phenol, shows a set of non-usual behaviors in function of the initial concentration of phenol. The most remarkable of them is a burst firing, which was explained by a competition between two redox cycles, one with aliphatic species and one with phenolic species

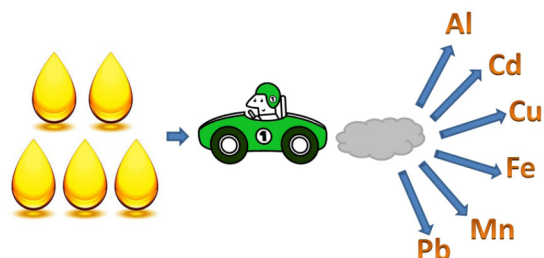




- 2033 Determination of Trace Elements in B5-diesel Oil by HR-CS ET AAS Using a Simple Dilute-and-Shoot Approach**  
*Daiane P. C. de Quadros and Daniel L. G. Borges*

#### Graphical Abstract

B5-diesel, a blend of biodiesel and diesel oil, is widely used in Brazil and it is responsible for the emission of trace elements to the atmosphere. In this work, a simple procedure aiming at the analysis of B5-diesel samples by high-resolution continuum source electrothermal atomic absorption spectrometry (HR-CS ET AAS) is described

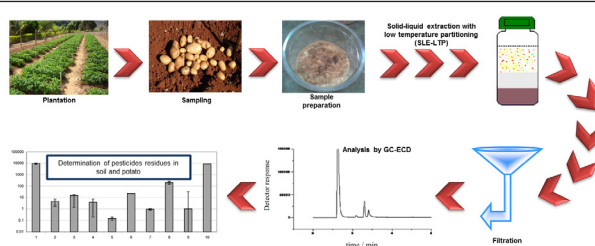


- 2042 Determination of Chlorpyrifos and Thiamethoxam in Potato Tuber (*Solanum tuberosum* L.) and Soil of Brazil Using Solid-Liquid Extraction with Low Temperature Partitioning (SLE/LTP)**

*Leila M. B. Rigueira, Kamilla de L. Ribeiro, Maria Eliana L. R. de Queiroz, Antônio A. Neves, Laércio Zambolim and Ricardo M. Oliveira*

#### Graphical Abstract

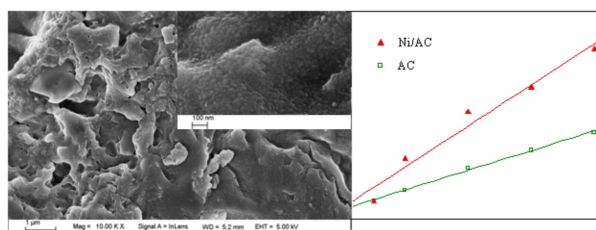
This paper describes a method for determining chlorpyrifos and thiamethoxam in potato and soil using the technique of solid-liquid extraction with low temperature partitioning and determination by gas chromatography



- 2050 Preparation of a Composite Particle Electrode by Electroless Plating and Its Electrocatalytic Performance in the Decolorization of Methyl Orange Dye Solution**  
*Guiping Cao, Feng Xu and Shengan Xia*

#### Graphical Abstract

A nickel-loaded activated carbon (Ni/AC) composite particle electrode was prepared by electroless plating with palladium-free pretreatment. The electrocatalytic performance of Ni/AC electrode was superior to that of AC electrode under the same electrolysis conditions in the three-dimensional electrode cell



## Short Reports

- 2059 Synthesis of Fatty Trichloromethyl- $\beta$ -diketones and New 1*H*-Pyrazoles as Unusual FAMES and FAEEs**  
*Alex F. C. Flores, Rogerio F. Blanco, Alynne A. Souto, Juliana L. Malavolta and Darlene C. Flores*



#### Graphical Abstract

This work describes the synthesis of a novel alkyl 1*H*-pyrazole-5-carboxylate series from versatile precursors 1,1,1-trihalo-4-methoxy-3-alken-2-ones obtained from long chain ketones. These are promising new oleochemical derivatives

