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## **Cover Picture**



This review deals with the chemistry of the sesquiterpenoid alkaloids, a relatively small group of natural products but with outstanding properties, structures and relevance. We couple this text with our respects for the premature disappearance of Angelo da Cunha Pinto, our colleague who came perhaps from Tras dos Montes, and loved to make much fun of all of us while teaching us how to be very involved in all aspects of organic chemistry. First, he dedicated himself to natural products chemistry, and later came round to appreciating their synthesis. Details are presented in the Review **The Chemistry of the Sesquiterpene Alkaloids** by *Timothy J. Brocksom, Kleber T. de Oliveira and André L. Desiderá* on page 933.

# Contents

## **Reviews**

927 Silver and Silver Chloride Nanoparticles and their Anti-Tick Activity: a Mini Review Nelson Durán, Marcela Durán and Celso E. de Souza



Graphical Abstract Silver nanoparticles can act against ticks or against major pathogens transmitted by the bite of ticks such as bacteria, viruses or protozoa with equal or better efficacy of antibiotics, antiviral or antiparasitic agents. The Chemistry of the Sesquiterpene Alkaloids Timothy J. Brocksom, Kleber T. de Oliveira and André L. Desiderá



#### Graphical Abstract

This review presents the structures, biological activities, biosynthesis, and syntheses of the sesquiterpene alkaloids, principally the dendrobine and guaipyridine groups.

### **Articles**



Eduardo J. Nassar, Jorge V. L. Silva, Marcelo F. Oliveira and Izaque A. Maia



The sol-gel methodology affords materials with useful properties for application in biological medium. Additive manufacture is an effective technology to produce complex macrostructures. In combination, sol-gel and additive manufacture produce materials with new properties for various applications.





### 950 A Simple and Fast Method for Magnetic Solid Phase Extraction of Ochratoxin A

Azam Sargazi, Amin Aliabadi, Ali Rahdari, Samin Allahdini-Hesaroiyeh, Massoud Nejati-Yazdinejad and Mostafa Heidari Majd

Graphical Abstract Dopamine loaded MNPs were used as an electrostatic sorbent in magnetic solid phase extraction for separation of ochratoxin A.



960 Laccase-Assisted Rapid Synthesis of Colloidal Gold Nanoparticles for the Catalytic Reduction of 4-Nitrophenol Fang Li, Zheng Li, Chang Zeng and Yonggang Hu



Graphical Abstract

Gold nanoparticles were rapidly synthesized by using laccase in alkaline medium at ambient conditions, and exhibited high catalytic stability for the reduction of 4-nitrophenol to 4-aminophenol in the presence of NaBH<sub>4</sub>.

### Vol. 28, No. 6, 2017

967 In Tube Ultrasonic and Air Assisted Liquid-Liquid Microextraction-Gas Chromatography-Mass Spectrometry Determination: a Novel Method for the Determination of Phthalate Esters in Aqueous Samples Abolfazl Farahani, Majid Ramezani, Jalal Hassan and

Ali Niazi







Synthesis, Three-Dimensional Structure, Conformation and Correct Chemical Shift Assignment Determination of Pharmaceutical Molecules by NMR and Molecular Modeling Sl online Sirlene O. F. de Azeredo, Edijane M. Sales and

In tube ultrasonic and air assisted liquid-liquid microextraction (IT-UAA-LLME) method, was developed for the preconcentration of some phthalate esters, prior to their determination using gas chromatography

José D. Figueroa-Villar



Molar Rati

**Graphical Abstract** Synthesis and application of NMR and molecular modeling to confirm the complete structure and the non questionable chemical shift assignment of these products.

985	Isopropyl Octanoate Synthesis Catalyzed by Layered Zinc	O Zinc octanoate O
http://	<i>n</i> -Octanoate	т сн стори стори
	Swami A. Maruyama, Luis Ricardo S. Kanda and	
SI online	Fernando Wypych	OH 5 N

#### **Graphical Abstract**

**Graphical Abstract** 

mass spectrometry.

Reusable layered zinc *n*-octanoate was employed as catalyst in the esterification of octanoic acid with isopropanol, providing high acid to ester conversions.





**Graphical Abstract** The cyclodepsipeptides beauvericins and bassianolide were identified from the *Beauveria bassiana* extracts. These extracts showed larvicidal activity on 3<sup>rd</sup> instar of *Aedes aegypti*.





# activity on 5 instal of Aedes degyp



Miscellaneous Diterpenes from the Aerial Parts of *Plectranthus* ornatus Codd

🗧 Fábio N. Ávila, Francisco C. L. Pinto, Thiciana S. Sousa,

SI online Maria Conceição M. Torres, Leticia V. Costa-Lotufo, Danilo D. Rocha, Mayron A. de Vasconcelos, Nairley Cardoso-Sá, Edson H. Teixeira, Maria Rose Jane R. Albuquerque, Edilberto R. Silveira and Otília D. L. Pessoa

#### **Graphical Abstract**

Nine diterpenes, including five unknown diterpenes derivatives, were isolated from the aerial parts of cultivated specimens of *Plectranthus ornatus*. All compounds were assayed against the four human cancer cell lines, and Gram-positive and Gram-negative bacteria strains.



# 1023 First Asymmetric Reduction of Isatin by Marine-Derived Fungi

Willian G. Birolli, Irlon M. Ferrreira, David E. Q. Jimenez, Slonline Bianca N. M. Silva, Bárbara V. Silva, Angelo C. Pinto and André L. M. Porto

### **Graphical Abstract**

A screening was carried out and several strains of marine-derived fungi were able to reduce isatin and produced the enantioenriched dioxindole, up to 66% *ee* and with different conversions (11-98%).



1030 Development of a Dissolution Test for Fenbendazole-Praziquantel Capsules Using UV-PLS Method Silvana E. Vignaduzzo, María A. Operto and Patricia M. Castellano



Graphical Abstract The aim was to develop a dissolution test for fenbendazole-praziquantel capsules and an UV-PLS method for its evaluation. 1048

1063

Selma E. Mazzetto





Sl online Josiane O. Cardoso, Sérgio S. Thomasi, Tiago Venâncio, Ivan R. Pitta, Maria do Carmo A. de Lima and Regina V. Oliveira

#### **Graphical Abstract**

A semi-preparative chromatography application and stacking injection for purification of drugs with high efficiency and lower consumption of solvents associated with liquid chromatography-multistage mass spectrometry (LC-MS<sup>n</sup>) and liquid chromatography-solid phase extractionnuclear magnetic resonance (LC-SPE-NMR) techniques for structural characterization of impurities.





Study on formation of GSH conjugation reaction of Mannich bases of 4'-hydroxylchalcones by RP-TLC, RP-HPLC and RP-HPLC-MS methods.

Synthesis, Characterization and Dielectric Properties of New 5-(4-Hydroxyphenyl)-10,15,20-tri-4-[2-(3-pentadecylphenoxy) ethoxy]phenyl porphyrin and Their Ni, Co and Cu Complexes SI online João P. F. Mota, Antônio E. da Costa Júnior, Viviane G. P. Ribeiro, Samuel G. Sampaio, Nayane M. A. Lima, Fernando L. F. da Silva,

Claudenilson S. Clemente, Giuseppe Mele, Diego Lomonaco and



**Graphical Abstract** Synthesis of a novel asymmetric porphyrin based on cardanol.

1074 Development and Characterization of Synthetic Chalcones-Loaded Eudragit RS 100 Microparticles for Oral Delivery Cristian R. Kleemann, Talitha C. dos Santos, Luciana C. Tavares, Moacir G. Pizzolatti and Angela M. de Campos

Graphical Abstract The study presents the development of a drug delivery system and validation of a simple and rapid high performance liquid chromatography method for the characterization of two chalcones in Eudragit® RS100-based microparticles.



etaldehyde

Formic acid

Formaldehyde

1081 Strategy for Correction of Matrix Effect on the Determination of Pesticides in Water Bodies Using SPME-GC-FID Vitor P. A. Silva, Mário S. O. Paz, Rivelino M. Cavalcante and Ronaldo F. Nascimento

Graphical Abstract Determination of pesticides in river water, estuarine, seawater and weir water using standard surrogate and relation factor by solid phase microextraction gas chromatography with flame ionization detector (SPME-GC-FID).



lethanol

PtSn/C (3:1)

Ethanol



Electrooxidation of Mixed Ethanol and Methanol Solutions on PtSn/C Electrocatalysts Prepared by the Polymeric Precursor Method

Sl online Aline Amorim, Luanna S. Parreira, Júlio César M. Silva and Mauro C. dos Santos



PtSn/C (3:1) electrocatalyst for mixed solutions EtOH:MeOH oxidation can result the formation of CO<sub>2</sub> at low potentials, as well as the highest amount of by-products than ethanol and methanol.

1098 Thermodynamic Feasibility of Pure Hydrogen Production and Storage in Iron and Germanium Based Double Chemical Looping Process Grzegorz Stowiński and Adam Smoliński

Graphical Abstract The idea of pure hydrogen production and storage in iron and germanium based double chemical looping process.

 Reducer reactor
 Oxidizer reactor

 Fuel
 H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>

 MeO<sub>x</sub>
 MeO<sub>y</sub>

 H<sub>2</sub>O, CO<sub>2</sub>
 H<sub>2</sub>O, air

 
 1106
 Antitubercular Activity Increase in Labdane Diterpenes from Copaifera Oleoresin through Structural Modification Aline N. Silva, Ana Carolina F. Soares, Mirela M. W. Cabral, Alex R. P. de Andrade, Marilza B. M. da Silva, Carlos H. G. Martins, Rodrigo C. S. Veneziani, Sérgio R. Ambrósio, Jairo K. Bastos and Vladimir C. G. Heleno

### **Graphical Abstract**

Our work with natural diterpenes from *Copaifera* oilresin led to derivatives with remarkably increased anti-tubercular activity. Derivatives were obtained through synthetic structural modifications and their activities reached two, five and twenty-fold compared to natural precursors.



1113

h





EG 0.5 N

Monascus fungus (in vivo solid phase microextraction (SPME)), the main being ethanol, 2-methyl-propanol, 3-methylbutanol, 2-methylbutanol and 2-phenylethanol, such compounds have been studied by empirical models.







Wavenumber / cm<sup>-</sup>

PdRuRh catalysts no self-inhibition

74:09:17

70:24:06

Wavenumber / cm<sup>-</sup>

Opposite to Pt, on PdRuRh catalysts CO<sub>2</sub> is produced earlier than oxalic acid, and there is no self-inhibitory effect when EG concentration is increased.





Ronilson F. Souza, Geilson A. da Silva, Alberto C. Arruda, SI online Milton N. da Silva, Alberdan S. Santos, Daniella P. A. Grisólia, Moises B. Silva, Claudio G. Salgado and Mara Silvia P. Arruda



Graphical Abstract

One new isoflavone, in addition to two known ones were isolated from the leaves of Vatairea guianensis Aubl. (Fabaceae). The extract, AcOEt fraction and two isolated compounds exhibited antifungal activity through in vitro testing.

Eco-Friendly, Catalyst and Solvent-Free, Synthesis of Acetanilides and N-Benzothiazole-2-yl-acetamides





Silvio Cunha and Lourenço L. B. de Santana SI online

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Graphical Abstract An expeditious and green synthesis of acetamides is described in good yield without external heating, and with simple purification.