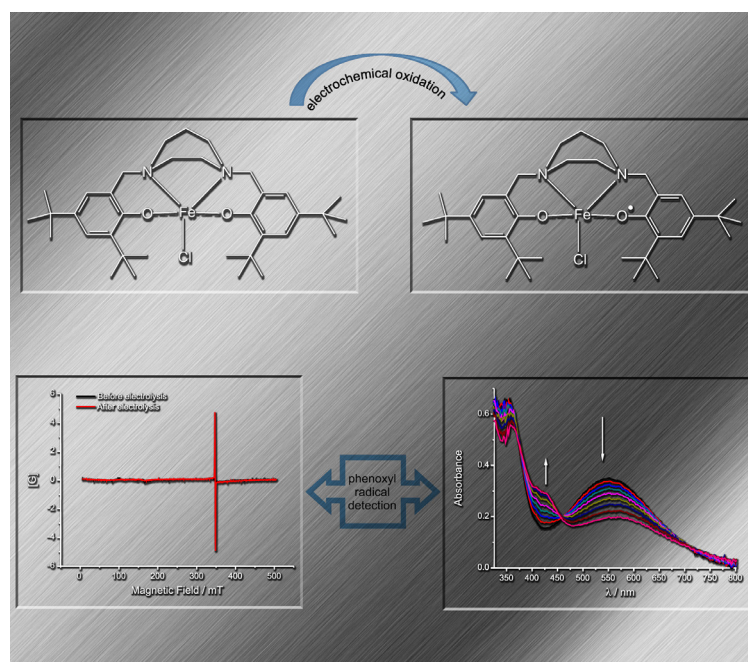


Cover Picture



The cover picture shows that after electrochemical oxidation a phenoxyl radical species is formed. The synthesis and evaluation of radical formation of other four iron complexes are also described. The main difference in the structure of the complexes is related with the diazocyclic units of the ligands: piperazine, homopiperazine, hexahydropyrimidine or hexahydropyrimidin-5-ol. Details are presented in the Article **Iron Complexes Containing Electrochemically Active Diazocycle-bis(di-*tert*-butyl-phenol) Ligands** by Luísa L. Mendes, Christiane Fernandes, Roberto W. Franco, Leonardo M. Lube, Sheng-Hsuan Wei, Joseph H. Reibenspies, Donald J. Darensbourg and Adolfo Horn Jr. on page 1050.

Contents

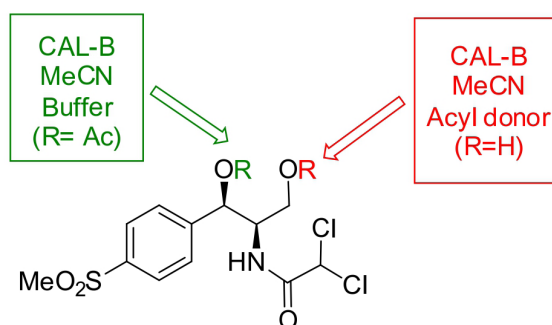
Articles

987 Regioselective Preparation of Thiamphenicol Esters Through Lipase-Catalyzed Processes

Marcos R. da Silva, Tasso G. C. Montenegro, Marcos C. de Mattos, Maria da Conceição F. de Oliveira, Telma L. G. de Lemos, Gonzalo de Gonzalo, Iván Lavandera, Vicente Gotor-Fernández and Vicente Gotor

Graphical Abstract

The lipase-catalyzed synthesis of thiamphenicol derivatives has been studied through complementary acylation and hydrolytic approaches, finding *Candida antarctica* lipase B as the most efficient biocatalyst for the selective modification of both thiamphenicol and thiamphenicol diacetate, respectively



995 Prenylated Flavonoids from Roots of *Dahlstedtia glaziovii* (Fabaceae)

Edione F. Canzi, Francisco A. Marques, Sirlei D. Teixeira, Ana Maria G. A. Tozzi, Marcos J. Silva, Renata Maria T. Duarte, Marta Cristina T. Duarte, Ana Lúcia T. G. Ruiz, Paula A. Monteiro, João E. de Carvalho and Beatriz Helena L. N. Sales Maia

Graphical Abstract

A phytochemical study of roots of *Dahlstedtia glaziovii* (Fabaceae) furnished a new dibenzoylmethane glaziovione, along with eighteen known compounds. The antiproliferative activity of the isolated dibenzoylmethanes and flavones were investigated, being the dibenzoylmethanes more active than flavones

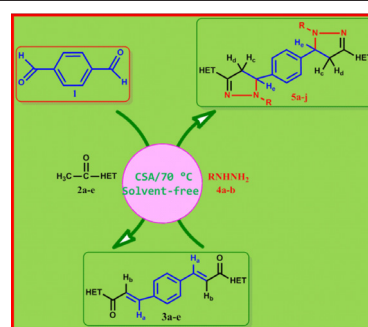


1002 An Efficient Synthesis of Novel Bis-Chalcones and Bis-Pyrazolines in the Presence of Cellulose Sulfuric Acid as Biodegradable Catalyst under Solvent-Free Conditions

Zeba N. Siddiqui and Tabassum Khan

Graphical Abstract

Novel synthesis of bis-chalcones and bis-pyrazolines using cellulose sulfuric acid as highly efficient and biodegradable heterogeneous catalyst under solvent-free conditions

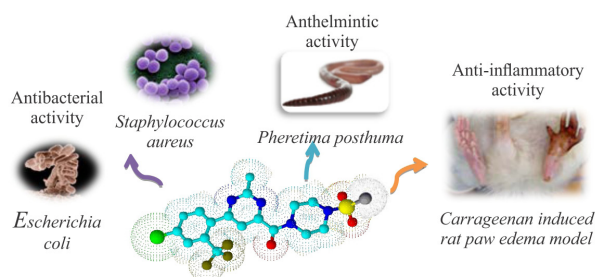


1012 Synthesis, Antibacterial, Anthelmintic and Anti-Inflammatory Studies of Novel Methylpyrimidine Sulfonyl Piperazine Derivatives

Nadigar R. Mohan, Swamy Sreenivasa, Karikere E. Manojkumar, Tadimety M. C. Rao, Boreddy S. Thippeswamy and Parameshwar A. Suchetan

Graphical Abstract

Methylpyrimidine sulfonyl piperazine 3d optimized structures. Substituted sulfonyl piperazines with pyrimidine, piperazine and sulfonamide functionality, a combination of three pharmacologically important moieties, was synthesized and their antibacterial, anthelmintic and anti-inflammatory activities were evaluated

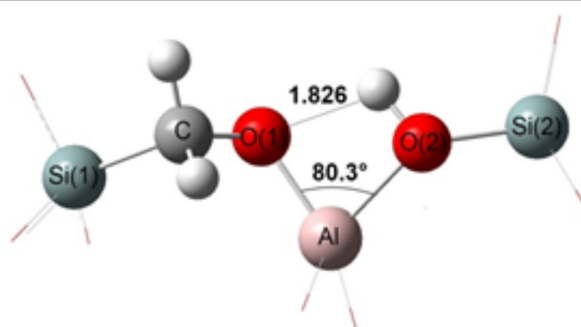


1021 Theoretical Studies of the Insertion of Carbenes in the Zeolite Framework: Modification of the Acidity and Creation of Chiral Sites

Maria Beatriz S. Mota, Nilton Rosenbach Jr. and Claudio J. A. Mota

Graphical Abstract

Calculations show that insertion of carbenes into the framework structure of zeolite Y is thermodynamically favored, affecting the acid strength and creating chiral sites in the structure

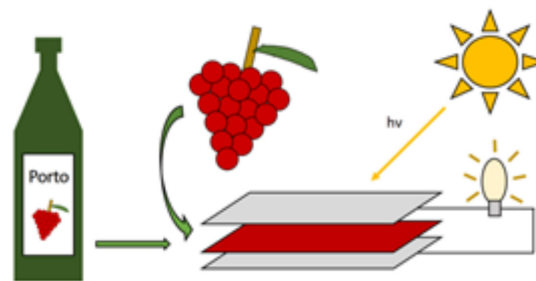


1029 Pyranoflavylum Derivatives Extracted from Wine Grape as Photosensitizers in Solar Cells

Christiane M. Santos, Bárbara Gomes, Luís M. Gonçalves,
Joana Oliveira, Sandra Rocha, Manuel Coelho,
José A. Rodrigues, Victor Freitas and Helena Aguiar

Graphical Abstract

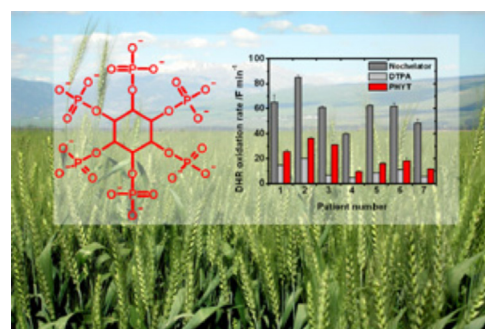
Dyes obtained from grapes were used as sensitizers in dye-sensitized solar cells with efficiencies up to 0.08%. Moreover, the direct use of Port wine drops curiously resulted in an efficiency of 0.025%


1036 Phytate Decreases Oxidative Damage Caused by Labile Forms of Iron in Solution, Blood Plasma and in HeLa Cells

Frederico A. Schleh, Orlando Chiarelli-Neto,
Mayara N. Fontes, Renato Najjar and Breno P. Espósito

Graphical Abstract

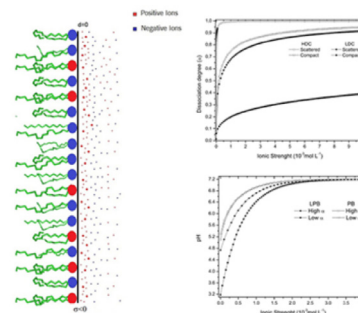
Phytate is a natural product that was found to be antioxidant in models of iron-overload disorders


1041 Amphiphilic Planar Membranes in Ionic Equilibrium: a Study of pH Position-Dependent Values

Guilherme V. Bossa, Davi R. Ratero, Augusto A. Neto,
Alfred Fahr and Tereza P. Souza

Graphical Abstract

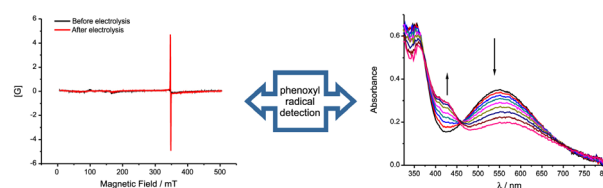
A membrane with ionizable groups is modeled as a plan with a negative charge density. Results for dissociation degree and pH variation with the ionic strength are presented for the Poisson-Boltzmann equation (PB) and its linear form (LPB)


1050 Iron Complexes Containing Electrochemically Active Diazocycle-bis(di-tert-butyl-phenol) Ligands

Luisa L. Mendes, Christiane Fernandes, Roberto W. A. Franco,
Leonardo M. Lube, Sheng-Hsuan Wei, Joseph H. Reibenspies,
Donald J. Darensbourg and Adolfo Horn Jr.

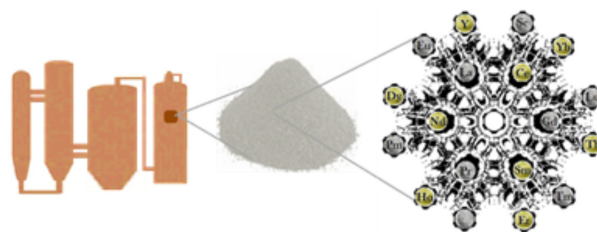
Graphical Abstract

Four mononuclear and one dinuclear iron(III) compounds were synthesized employing four different ligands, which are distinct with respect to the diazocycle backbone. Electrochemical data showed that the compounds show ligand-centered redox processes. The formation of phenoxyl radical was confirmed by EPR and UV-Vis spectroscopies for complexes $[\text{FeL}_2\text{Cl}]$, $[\text{Fe}_2(\text{L}_4)(\text{HL}_4)\text{Cl}]$ and $[\text{FeL}_4]$



1062 Determination of Rare Earth Elements in Spent Catalyst Samples from Oil Refinery by Dynamic Reaction Cell Inductively Coupled Plasma Mass Spectrometry

Jessee S. A. Silva, Tatiane de A. Maranhão, Fernando J. S. de Oliveira, Adilson J. Curtius and Vera L. A. Frescura



Graphical Abstract

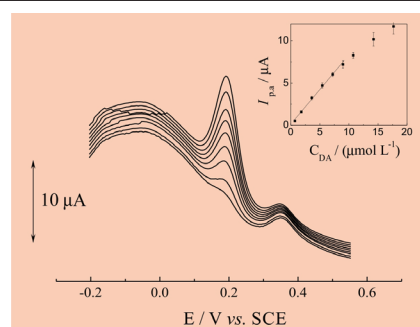
Fluid catalytic cracking (FCC) spent catalyst as a source of rare earth elements (REE) - an interesting application in agreement with the recycling-recovery concept

1071 Using of a Graphite-Polyurethane Composite Electrode Modified with a Schiff Base as a Bio-Inspired Sensor in the Dopamine Determination



SI online

Sidney X. dos Santos and Éder T. G. Cavalheiro

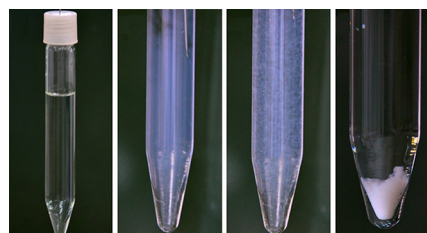


Graphical Abstract

Response in different dopamine concentrations and analytical curve

1078 Preconcentration and Determination of Cadmium in Water and Food Samples by *in situ* Surfactant-Based Solid-Phase Extraction and Flame Atomic Absorption Spectrometry

Mohammad Reza Jamali and Afsaneh Boromandi

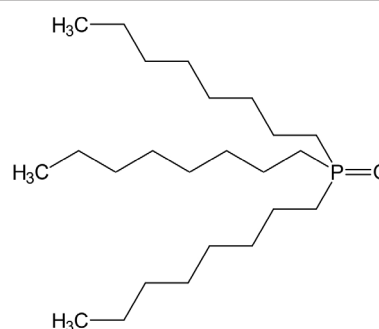


Graphical Abstract

In situ surfactant-based solid-phase extraction (ISS-SPE) is proposed as a preconcentration procedure for the determination of cadmium in water and food samples by flame atomic absorption spectrometry. From left to right: sample solution; injection of NaPF₆ solution; end of injection and enlarged view of sedimented phase after centrifugation

1086 Thin Film-XRF Determination of Uranium Following Thin-Film Solid Phase Extraction

Jalal Hassan, Seyed M. Hosseini, Shahla Mozaffari, Babak Jahanparast and Mohammad H. Karbasi



Graphical Abstract

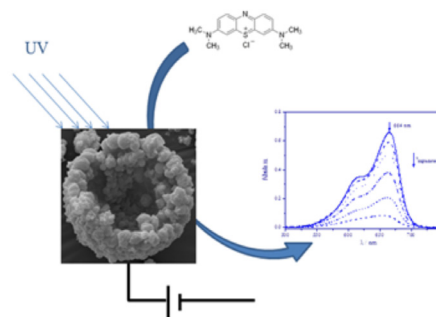
A sensitive method based on the preconcentration of uranium on modified filter paper (thin-film solid phase extraction) has been developed to determinate this element in water and soil samples by X-ray fluorescence

1091 ZnO Prepared by Solution Combustion Synthesis: Characterization and Application as Photoanode

Adriana C. Lucilha, Renata Afonso, Paulo R. C. Silva,
Luiz F. Lepre, Rômulo A. Ando and Luiz H. Dall'Antonia

Graphical Abstract

ZnO photoelectrodes produced by combustion synthesis process promote the discoloration of methylene blue dye when irradiated with UV light

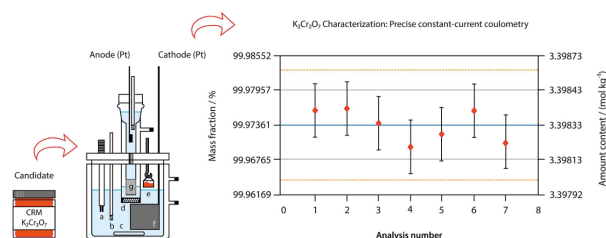


1101 International Comparisons for Coulometric Determinations of Dichromate Used to Develop Certified Reference Material for Oxidation-Reduction Titration

Paulo P. Borges and Wiler B. da Silva Junior

Graphical Abstract

Characterization process for certifying $K_2Cr_2O_7$ as certified reference material (CRM) by precise constant-current coulometry: from a candidate CRM until a certified value



1108 Analysis of Carotenoids, α -Tocopherol, Sterols and Phenolic Compounds from White Bread Enriched with Chia (*Salvia hispanica* L.) Seeds and Carrot (*Daucus carota* L.) Leaves

Swami A. Maruyama, Thiago Claus, Lucas U. R. Chiavelli,
Janksyn Bertozzi, Eduardo J. Pilau, Nilson E. de Souza, Jesuí
V. Visentainer, Sandra T. M. Gomes and Makoto Matsushita

Graphical Abstract

A Box-Behnken design and correlation studies were applied in order to obtain more information about how specific antioxidants affect the total antioxidant activity and the degree of forced oxidation in white breads with chia seeds and carrot leaves



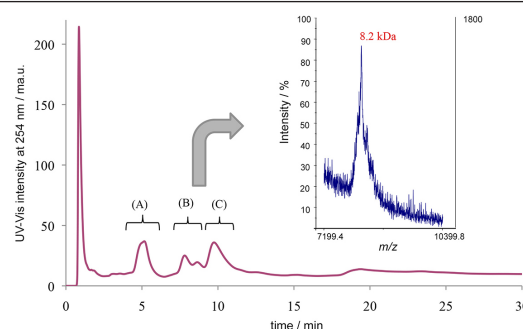
1116 Vanadium-Binding Protein in Marine Plankton from Tropical South Atlantic Ocean

Vinicius T. Kütter, Maria Montes-Bayón, Silvia M. Sella,
Alfredo Sanz-Medel and Emmanoel V. Silva-Filho

SI online

Graphical Abstract

Coupling of anionic exchange chromatography (AEC) with matrix-assisted laser desorption-ionization-time of flight (MALDI-TOF) in order to determine the molecular mass of V-binding protein(s) in phytoplankton (> 64 μ m) from Cabo Frio

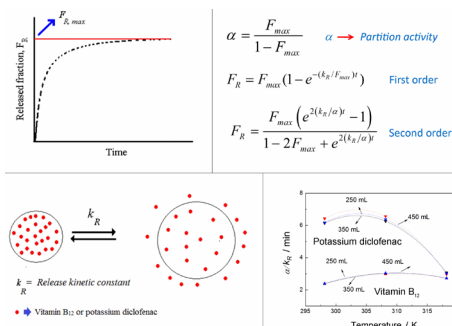


1124 Release of Vitamin B₁₂ and Diclofenac Potassium from *N,N*-dimethylacrylamide-modified Arabic Gum Hydrogels - the Partition-Diffusion Model

Ricardo Bossoni, André Riul, Artur J. M. Valente,
Adley F. Rubira and Edvani C. Muniz

Graphical Abstract

3D hydrogel matrices based on GAm (chemically modified Arabic Gum) and DAAM (dimethyl acrylamide) were prepared on GAm:DMAAm rate 60:40 w:w. Essays of solutes (VitB₁₂ and DFK) release from 3D matrices were performed. The partition-diffusion model allows predicting whole profile of release in any case. It was verified that α/k_R ratio is not volume dependent, at a certain temperature, but the temperature strongly influences such ratio for both solutes



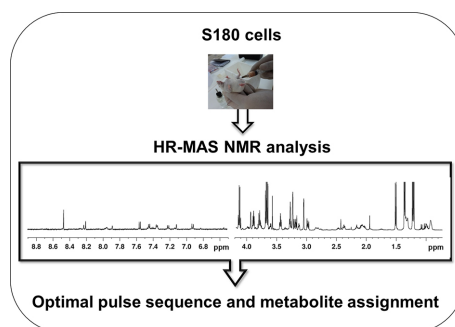
Short Reports

1135 ¹H HR-MAS NMR and S180 Cells: Metabolite Assignment and Evaluation of Pulse Sequence

Aline L. de Oliveira, Bruno César B. Martinelli, Luciano M. Lião, Flávia C. Pereira, Elisângela P. Silveira-Lacerda and Glauçia B. Alcantara

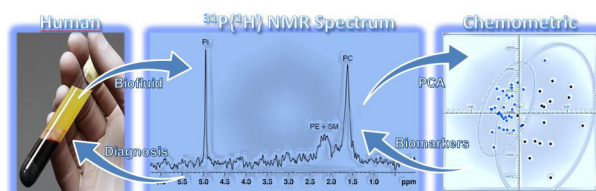
Graphical Abstract

S180 cells, a model of tumor murine for testing drug candidates with potential anticancer activity, were studied by HR-MAS NMR for establishing optimal pulse sequence and metabolite assignment



1143 Ischemic Stroke Progress Evaluation by ³¹P NMR-Based Metabonomic of Human Serum

Caroline W. P. S. Grandizoli, Marcos C. Lange, Felipe T. M. Novak, Francinete R. Campos and Andersson Barison



Graphical Abstract

In this work, ³¹P NMR-based metabonomic of human blood serum allowed to discriminate ischemic stroke patients from health individuals and gives insights over the mechanism triggered by ischemic stroke