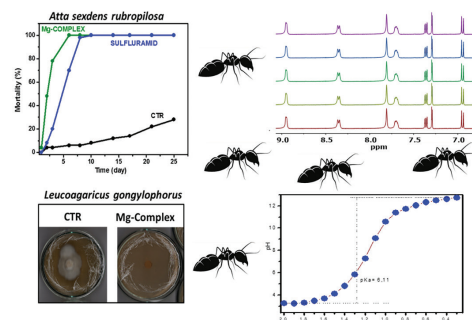


- 267 Insecticidal and fungicidal activity of a magnesium compound containing isovanillic acid against leaf-cutting ant and its symbiotic fungus

Eldevan S. Silva, Rafael C. Marchi, Carla S. P. Matos, M^a Fátima G. F. Silva, João B. Fernandes, Odair C. Bueno and Rose M. Carlos

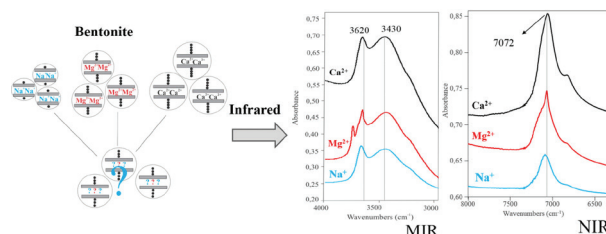
Physical chemical characterization of the magnesium (II) complex containing isovanillic acid with insecticidal and fungicidal potential against leaf-cutting ant and its symbiotic fungus.



- 272 Diferenciação catiônica de bentonitas por infravermelho: um estudo dos efeitos da hidratação dos cátions trocáveis

Andréia O. Rodrigues, Rômulo S. Angélica e Simone P.A. Paz

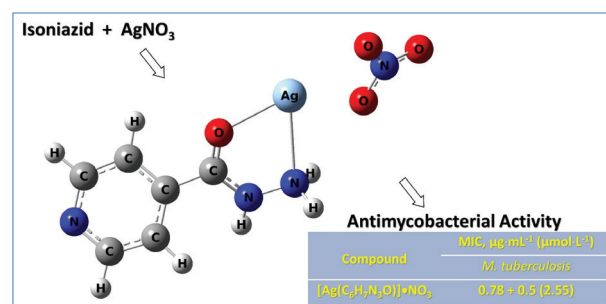
Infrared spectroscopy proved to be an effective technique in the cationic differentiation of bentonites using the characteristic bands "7072 cm⁻¹" and "3620 and 3430 cm⁻¹". The increasing order of intensity follows a pattern characteristic: Na⁺<Mg²⁺<Ca²⁺.



- 278 Synthesis, characterization, DFT modeling and *in vitro* antimycobacterial activity assays of a silver(I)-isoniazid complex

José A. Paris Junior, Maurício Cavicchioli, Rachel T. A. Machado, Fernando R. Pavan, Douglas H. Nakahata, Pedro P. Corbi, Adão M. F. Costa, Douglas H. Pereira and Antonio C. Massabni

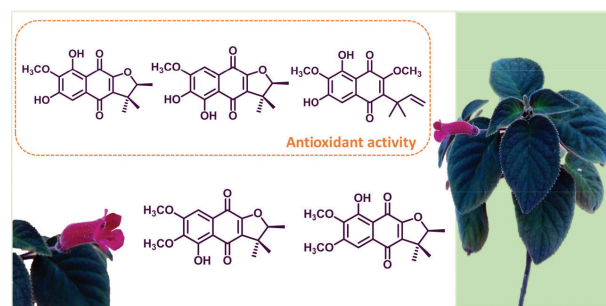
A silver(I) complex with the antimycobacterial drug isoniazid is described. It presented a minimal inhibitory concentration (MIC₉₀) of 0.78 µg mL⁻¹ against the standard *Mycobacterium tuberculosis* strain H37Rv.



- 284 Antioxidant naphthoquinones of *Sinningia reitzii* from Santa Catarina State, Brazil

Vanessa Winiewski, Adson S. Silva, Kattleen D. C. Alvarez, Eduardo L. de Sá, Marcos J. Salvador and Maria Élide A. Stefanello

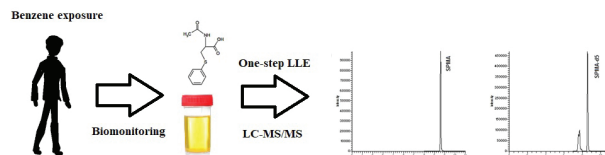
Two new and three known naphthoquinones, including three with antioxidant capacity, were isolated of *Sinningia reitzii* from Santa Catarina State, Brazil.



Nota Técnica

- 334 A simple and sensitive LC-MS/MS method for the determination of s-phenylmercapturic acid in human urine

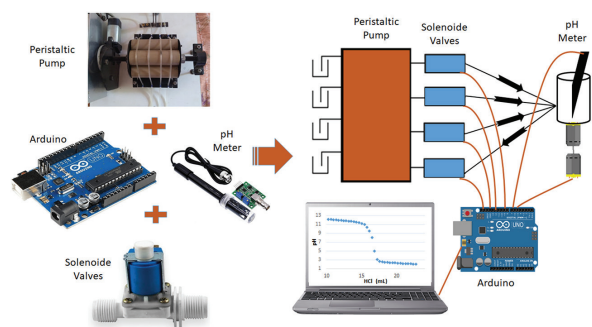
Andressa P. Gomes, Eduardo Barbosa, Ana L. A. dos Santos, Lilian F. Lizot, Elisa Sauer, Solange C. Garcia, Rafael Linden, Marina V. Antunes and Mariele F. Charao



ALC-MS/MS method validation using an efficient one-step liquid-liquid extraction, conferring a cost-effective sample analysis and easy execution, making this an applicable biomarker in the laboratory routine.

- 341 Titulador automático em fluxo-batelada utilizando um hardware de código fonte aberto Arduino

Fernanda S. C. Soares, Rúbia E. C. R. Rodrigues, Carla M. Bossu, Márcio S. Soares, Sidney X. dos Santos, Gabriel O. Uebe e Alex A. Silva



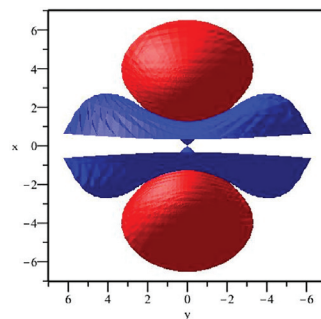
Automatic titrimetric method in flow-batch with potentiometric detection developed in this work allow the implementation of practical disciplines, such as potentiometric titration and flow analysis system in undergraduate chemistry courses.

Educação

- 348 Orbitals in general chemistry, part II: mathematical realities

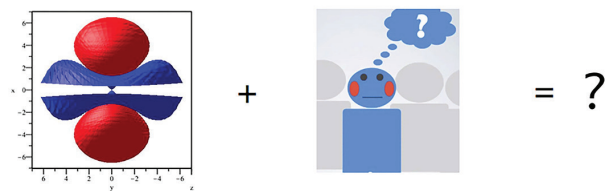
Guy Lamoureux and John F. Ogilvie

This article provides mathematical facts about the use of orbitals in General Chemistry; 1) There are four sets of distinct, but equivalent, orbitals; 2) There is no logical basis to explain molecular structure with orbitals.



- 355 Orbitals in general chemistry, part III: consequences for teaching

Guy Lamoureux and John F. Ogilvie

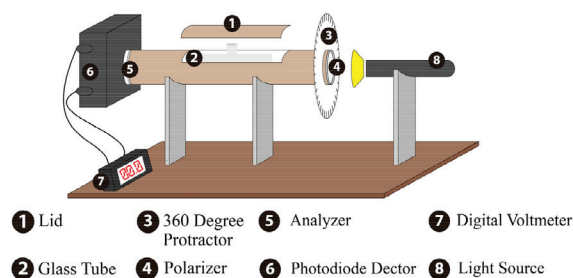


What are the consequences of teaching the complexity of orbitals to an average student of General Chemistry?

361 Construction of a low-cost polarimeter for educational purposes

Claudio A. G. da Camara

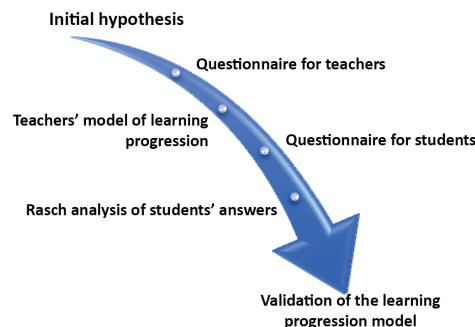
Polarimetric analysis of chiral chemical substances with the use of polarizing and analyzing filters and the detection of the displacement of polarized light by a photodiode connected to a voltmeter.



366 Estudo e validação de uma progressão de aprendizagem em cinética química de estudantes de nível superior

Luciana G. Monteiro, Antonio C. O. Guerra e Joaquim F. M. Silva

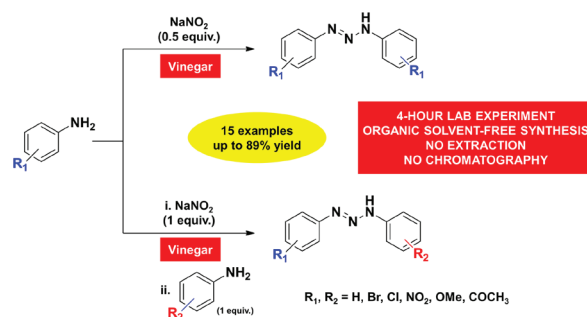
The learning progression models of Chemistry, Chemical Engineering and Pharmacy students from two federal universities in Rio de Janeiro on Chemical Kinetics were built from Rasch analysis of their responses to a questionnaire based on teachers' conceptions about their learnings.



372 Síntese verde de 1,3-diariltriazenos simétricos e assimétricos em vinagre

Leonardo C. Messina e Álvaro T. Omori

An expeditious, organic solvent-free synthesis of 1,3-diaryltriazenes from substituted anilines using vinegar as solvent / acid source is presented. Reagent reactivity and product stability discussions are suitable for undergraduated students.



Assuntos Gerais

377 Escalonamento de tecnologias: desenvolvimento de produto e processo do laboratório à escala piloto conectado ao mercado (Parte 1)

Elimar P. Vasconcellos, Priscila M^a T. G. de Souza, Marcella R. Franco, Vinícius G. de Castro, Lorena V. Souza, Rochel M. Lago e Marcelo G. Speziali

The scaleup process can be divided into 3 steps in the lab from the basic research, product, process validation up to the more complex 4th step of building and operating the pilot plant.

