

Encontro da X SBPMat

Gramado-RS

25 to 29 | september
2011

Conference Details and Registration

All attendees are encouraged to visit the conference website <http://www.sbpmat.org.br/x-meeting> for further and updated information such as registration, submission of abstracts, important links for traveling (visas, travel agencies) and hotel reservation.

Symposia

- A) Magnetic and Superconducting Materials
- B) Biodegradable Polymer Materials
- C) Electronic Materials
- D) Surface Engineering: Fabrication, Characterization, Properties and Applications of Protective Coatings and Modified Surfaces
- E) Materials with Negative Properties
- F) Nanostructured Functional Materials for Advanced Energy and Environmental Applications
- G) Molecular Modeling Materials Science
- H) Structure-property Relationship of Advanced Metallic Materials
- I) Sol-gel Route to Prepare New Inorganic, Hybrid and Multifunctional Materials
- J) Solidification of Metals and Alloys
- K) Supramolecular Organic Materials for Electronic, Photonics and Nanotechnology
- L) Structure-Property Relationship of Ceramic Materials: Theoretical and Experimental Aspects
- M) Advances and Applications of Electron Microscopy
- N) Prospects for Materials Science with Synchrotron Radiation in Brazil
- O) 1st Brazilian Symposium in Friction Stir Welding and Processing
- P) Graphene

Official Travel Agency: Liga Turismo

The agency provides excellent hosting, airline tickets (20% discount), Gramado-PoA airport shuttle options and sightseeing suggestions.

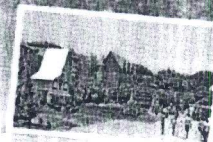
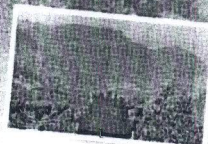
Liga Turismo also provides travel-hosting-tour combo options! Get in touch!

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Brazilian Materials
Research Society

X Brazilian MRS Meeting



16 symposia with oral, poster and invited lecture presentations

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Exhibits

Celebration of 10 years of Brazilian MRS

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*10 years of excellence in
the congregation of science
and research in materials
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Contact

Secretariat
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(55) (51) 3231-0311

Conference Chairs

Paulo F. P. Fichtner - UFRGS - RS
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Important Dates

April, 5th - Registrations open
May, 30th - Submissions deadline
June, 13th - Acceptance

Support



Credit of photos: Leonid Streltsov

Controlled desorption of potassium from polysaccharide hydrogels

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With development of new technologies, researches related to the “smart” materials increased considerably [1]. In the last two decades, special attention have been intended in superabsorbent polymers [2], which are materials composed of polymeric networks that have the ability to absorb large amounts of water and/or nutrient solution and release it in a controlled and sustained manner [3]. Thus, the present study aimed to investigate the effect of the biodegradable carboxymethyl cellulose polysaccharide (CMC) on sorption and desorption potassium phosphate nutrient processes from a new hydrogel based on acrylamide (AAm) and methacrylic acid (MAA). Measures of sorption and desorption potassium phosphate nutrient were quantified by a conductivity meter. The results indicated that the presence of CMC causes more interaction between the hydrogel and nutrient and also influences the ability of the desorption of nutrient from hydrogel. Thus, the ability of the controlled release nutrient by hydrogel is directly related to the amount of CMC, and it is also linked to the swelling degree. The values of swelling degree at equilibrium stage, amount of nutrient sorbed and released increased with the CMC concentration in the hydrogel up to 0.5%. From this CMC concentration, it was observed a considered decrease in these properties. This is an indication of the increase in compaction of the polymer chains, probably favored by increasing of possible interaction points between CMC-PAAm and/or CMC-PMAA. This fact difficult the process of diffusion of water molecules and nutrients, as well as the chain relaxations of the hydrogel. In addition, the presence of CMC has significantly improved the process of desorption time. The hydrogel without CMC released all potassium nutrient in 4 hours. For all hydrogels containing CMC, the desorption time was extended to 24-30 hours and desorption kinetics remained sustained until the end of the study, around 50 hours. Therefore, the hydrogels synthesized are potentially viable for use in controlled-release systems of nutrients.

Keywords: Controlled Release, hydrogel, CMC, Potassium Phosphate.

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[3] L. Xie, M. Liu, B. Ni, X. Zhang, W. Yanfang, *Chem. Eng. J.* **167**, 342 (2011).

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