

International Conference and Exhibition on **Biopolymers & Bioplastics**

August 10-12, 2015 San Francisco, USA

A new nanocomposite film based on gelatin and laponite

Paulo José do Amaral Sobral, Germán Ayala Valencia, Rodrigo Vinicius Lourenço and Ana Mônica Quinta Barbosa Bittante
University of São Paulo, Brazil

Films based on biopolymers have attracted interest of researchers because they are biodegradable. But, these materials have technological limitations principally due to the hygroscopic characteristic of biopolymers and plasticizers, usually, polyols. An alternative to improve the properties of these materials are the use of nanoparticles as loading. Although montmorillonite is the nanoparticle most used to produce biopolymers based nanocomposite films, laponite has an enormous potential because it is easily dispersed in water, outstanding solvent in the biopolymer film technology. Thus, this work presents results of some physical properties of recently developed nanocomposite films (NF) based on gelatin with different laponite concentrations. NF were prepared with casting film-forming solutions containing 0.0, 1.5, 3.0, 4.5 and 6.0 g laponite/100 g gelatin on an adequate support and dried on controlled conditions. Glycerol was used as plasticizer. The NFs were characterized for gloss (60°), color (CIELab), thermal (TGA) and mechanical (tensile tests) properties. Moreover, NFs were analyzed by scanning electron microscopy, X-ray diffraction (XRD), and Fourier transform infrared spectroscopy (FTIR). NFs were transparent and homogeneous. NF gloss, color and surface micrographs were not altered by the laponite concentration and laponite improved the thermal stability and mechanical properties (increasing Young modulus and tensile strength) of the gelatin-laponite nanocomposites. These results indicated that laponite was well dispersed in the biopolymer matrix. FTIR and XRD spectra corroborated with this statement. These nanocomposites have a great potential to be used in the packaging industry.

Biography

Paulo José do Amaral Sobral has completed his PhD in 1992 at ENSIC-INPL, France. Now, he is full Professor at University of São Paulo (USP), campus of Pirassununga (SP), Brazil, where he is the Dean of the Faculty of Animal Science and Food Engineering (FZEA-USP). He has more than 15 years of experience on biopolymers-based films technology, having published more than 130 papers in reputed journals (ISI h index= 25) and serving as an Editorial Board Member in some journals, such as the *Food Engineering Review*. He is the Associate Editor of the *International Journal of Food Studies*.

pjsobral@usp.br

Notes: