

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Concentration regimes of biopolymers xanthan, tara and clairana, comparing dynamic light scattering and distribution of relaxation time

Patricia Diaz de Oliveria¹, Ricardo C Michel², Alan J A McBride¹, Angelita da Silveira Moreira¹, Rosana F T Lomba³ and Claire T Vendruscolo¹

¹Federal University of Pelotas, Brazil

²Federal University of Rio de Janeiro, Brazil

³Well Engineering Technology Research and Development Centre Petrobras, Brazil

The aim of this work was to evaluate the utilization of analysis of the Distribution of Relaxation Time (DRT) using a dynamic light back-scattering technique as alternative method for the determination of the concentration regimes in aqueous solutions of biopolymers (xanthan, clairana and tara gums) by an analysis of the overlap (c^*) and aggregation (c^{**}) concentrations. The diffusion coefficients were obtained over a range of concentrations for each biopolymer using two methods. The first method analyzed the behavior of the diffusion coefficient as a function of the concentration of the gum solution. This method is based on the analysis of the diffusion coefficient versus the concentration curve. Using the slope of the curves, it was possible to determine the c^* and c^{**} for xanthan and tara gum. However, it was not possible to determine the concentration regimes for clairana using this method. The second method was based on an analysis of the DRTs, which showed different numbers of relaxation modes. It was observed that the concentrations at which the number of modes changed corresponded to the c^* and c^{**} . Thus, the DRT technique provided as an alternative method for the determination of the critical concentrations of biopolymers.

Biography

Patricia Diaz de Oliveira is an Adjunct Professor at Federal University of Pelotas, Rio Grande do Sul, Brazil. She holds a degree in Chemical Engineering from the Federal University of Rio Grande and a Doctorate in Biotechnology from Federal University of Pelotas. Presently, she is doing research at the Biopolymers Laboratory of UFPel.

bilicadiaz@yhahoo.com.br