



Anadolu Reoloji Derneği Anatolian Society of Rheology

Webinar Series # 4 : Prof. Dr. Pierre J. Carreau

Başlık/Title: Development of Polylactide /Nanocomposites Based on Nanocellulose



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About him: After a Bachelor (1963) and a Master in Chemical Engineering (1965) at Polytechnique Montréal, Prof. Pierre Carreau obtained his PhD at the University of Madison (Wisconsin) (1968), and then returned to Polytechnique Montréal where he pursued his entire career: Assistant Professor (1968– 1971), Associate Professor (1971– 1978), Full Professor (1978– 2011), and now Emeritus Professor (2011 –). He has initiated important research projects with Canadian, US, and European companies, in the areas of polymer rheology, polymer processing, and polymer blends.

When people hear the name Pierre J. Carreau, they immediately think of the well-known Carreau model (or of its extension denoted Carreau-Yasuda model) which was a result of his PhD under the supervision of Prof. Byron Bird. The paper he published in 1972 (Rheological Equations from Molecular Network Theories) is certainly one of the most cited papers in the polymer rheology world. Among his many achievements and publications, he also wrote two books devoted to Polymer Rheology and Polymer Processing.

Konu/Subject: Polylactide (PLA)/cellulose nanofiber (CNF) and crystalline nanocellulose (CNC) biocomposites were prepared via solution casting and direct melt mixing. To improve the compatibility, a masterbatch of CNFs and poly(ethylene glycol) (PEG) (1:2) was also prepared. The morphology, rheological and thermo-mechanical properties of PLA nanocomposites based on CNCs and CNFs are compared. Both systems show considerable property enhancements when prepared via solution casting. The total crystalline content of the PLA in the nanocomposites and the crystallization temperature increase, ascribed to the nucleation effect of the nanoparticles on the crystallization of PLA. In dynamic mechanical thermal analysis, the storage modulus of the nanocomposites increases significantly in the glassy region and drastically in the rubbery region. Moreover, a percolation model could be used to describe the storage modulus of the PLA/CNC nanocomposites. Finally, trends for future research will be briefly discussed.

Katılım ve bağlantı linki e-posta ile gönderilecektir / The connection link will be sent via email

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Ne zaman/When:

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