Applications of Nanocomposite Membranes

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Mr. Ragoubi received his Engineering degree in Textile processes and materials from ENIM in Monastir, Tunisia, in 2006, his Master's degree in mechanics and fibre science from ENSISA in France in 2007 and his Ph. D. in polymers and composite materials from the Université de Lorraine in France in 2010. Then, he worked as a post-doctoral fellow between 2010 and 2013 in the physics and mechanics textile laboratory LPMT in Mulhouse and at the Université de Lorraine. He recently joined the CTT Group and its Geosynthetics and Building Materials division where he now works as a postdoctoral fellow in partnership with the École de technologie supérieure of Montreal.

Mohamed's research includes the development of composites, nanocomposites and multilayer materials, the characterization of their mechanical, thermal and microstructural behavior, the valorisation of natural fibres and the modification of their surface properties by Plasma treatment.

Abstract

Nanocomposites are a new class of materials containing nanometric fillers. Due to the size features of the fillers, they possess properties not shared by micro and macrocomposites. Among these systems, nanocomposites containing clay nanoparticles have attracted considerable attention because of their excellent physical, barrier, mechanical and thermal properties. They have already found applications in various engineering sectors, for example food package, automotive, and medical device. This presentation will give a general overview of the characteristics of nanoparticles used as fillers in nanocomposites. It will also cover the unique properties they impart to the membranes that contain them. A brief presentation will be also made of results obtained by CTT Group in that field. It will conclude with a highlight of the scientific challenges and the great opportunities offered by nanocomposite membranes.