Special Issue

Rubber-Based Composites: Challenges in Reusing Waste and Nanostructures as Fillers

Message from the Guest Editors

Rubber, classified as an elastomer, is a flexible material capable of being stretched multiple times its original length without undergoing plastic deformation. Due to its properties such as elasticity, and thermal and electrical insulation, it finds extensive applications across various industries. To be utilized in these products, rubber undergoes vulcanization processes that enhance its mechanical strength and durability. Furthermore, the incorporation of reinforcing fillers can improve tensile and tear resistance. Commercial fillers, such as carbon black and silica, contribute to chemical and mechanical resistance, while the addition of fillers like calcium carbonate or talc reduces costs. The fillers decrease the polymer matrix mass without significantly compromising the material's properties. They can also enhance composite processing by reducing vulcanization time or improving molding and may impart new properties like electrical conductivity or flame resistance. The Special Issue aims to summarize recent advances regarding reinforcing fillers in rubber composites, reuse of waste as reinforcement, and nanostructures for the production of advanced engineering materials.

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