Editorial Corner

Natural Fibers as Perspective Materials

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In the present scenario, it was highlighted the importance of using more and more green materials to tackle a potential energy crisis. Considerable progress was made to use ecological solutions as well as environmentally friendly materials. It is known that the natural fibers are being increasingly used in recent years in order to develop newly polymer matrix composite systems replacing the conventional materials. The use of natural fibers in composites structures has been mentioned in early times, about 3,000 years ago, in ancient Egypt in the construction industry mainly used in building walls by mixing clay and straw. From past to now, the use of polymeric composites reinforced with natural fibers has been utilized in different fields of academia and several industries. The most common type of natural fibers utilized includes jute, hemp, flax, kenaf, sisal and bamboo due to their easy and economical availability. Natural fibers present the advantage of restricting the emission of the greenhouse effect caused by several gases and making them an effective solution in controlling environmental problems. Presently, the natural fiber composites have found wide applications in the automotive and construction industries. Some of the cost-effective products produced from composites are as follows: panels for partition and false ceiling, window and door frames, roof tiles, grain storage silos, bath units, etc., Although, the use of natural fiber composites are still growing in different applications these present some limitations in terms of poor moisture resistance behaviour. To overcome these problems, some researchers have discovered various technologies such as pretreatments for natural fibers, the transfer from macro to nano-fiber, as well as the hybridization of natural fiber with synthetic fiber. Nowadays, most of the researchers are working on chemical treatments and surface treatments of natural fibers to reduce the hydrophilic and hydrophobic nature of these natural fibers. Further, to enhance the mechanical properties of natural fiber composites the hybridizing method is used with synthetic fibers and with fillers, in order to solve the moisture absorption problem and also to create a great opportunity to use such materials in various applications. However, the natural fiber composites yet are facing several challenges due to their poor thermal properties and some aspects less explored, such as electrical resistance, thermal conductivity and acoustic insulation aspects. Future research and development need to concentrate on ecological materials with enough properties to replace the synthetic polymers with biopolymers and to develop new eco-friendly materials.

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