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Editorial corner – a personal view
Exploring the applicability of natural fibers for the development of biocomposites

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Growing global environmental awareness, the massive depletion of crude petroleum reserves, and new environmentally-friendly legislation has forced professionals to search for new biocomposite materials that could be used in various applications. Environmentally friendly natural fibers in composite systems receive a great deal of attention now due to their cost-effectiveness, wide availability, lightweight, and moderately high strength. These properties urged researchers to explore the applicability of several locally available natural fibers in various commercial and engineering composite applications (https://doi.org/10.3144/expresspolymlett.2020.27). The most recently investigated natural fibers are: Ficus religiosa, Coccinia grandis, Phoenex sp; Acacia tortilis, Leucas aspera, Albizia amara, Phoenix dactylifera L, Eleusine Indica, Cardiospermum Halicababum, Red banana peduncle, Pithecellobum dulce, Ziziphus mauritiana, etc.

Recently, several studies have suggested that these new natural fibers could be a cost-effective, technologically viable, and attractive substitute for conventional synthetic fibers in engineering applications (https://doi.org/10.3144/expresspolymlett.2012.108). Some disadvantages, such as non-uniform dimensions and heterogeneous properties and incompatibility with a hydrophobic polymer matrix, reduce their potential to be used as composite reinforcement. These limitations are addressed by various surface modification techniques that improve the arrangement of fibers and fiber-matrix adhesion. To improve the adhesion properties between hydrophilic fibers and a hydrophobic matrix, researchers have used various chemical modification methods, including alkaline, benzoyl chloride, potassium permanganate, and stearic acid treatments. Many studies have proved that chemically treated fibers show increased strength due to the reaction of the hydroxyl groups of fibers and the chemical treatment, which resulted in a better splitting of the fibers in the fiber bundles.

The development of environmentally friendly composites from the above-mentioned locally available natural fibers has become a hot topic. Researchers devote a lot of effort to modeling the properties of composites reinforced with these natural fibers to create fully bio-based natural fiber-reinforced composites with biopolymers as matrix material.

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