Advances in Materials Science and Engineering

Special Issue on

Green Composite Materials

CALL FOR PAPERS

Global awareness of environmental issues has resulted in the emergence of sustainable and environmentally friendly green materials, which are renewable resources based, recyclable, and biodegradable. To develop green composite materials, natural fibres, such as hemp, flax, jute, kenaf, and sisal, have been used to replace conventional synthetic fibres. In addition, matrix materials in the form of biopolymers or bioresins have been derived from starch, vegetable oils, and protein. Green composites are the next generation of sustainable composite materials and combine natural fibres with natural resins to make light and strong composites that are recyclable or biodegradable by trigger. The use of renewable resources reduces the needs for petrochemicals and minerals, resulting in less natural resources depletion effect on the planet. Commercial products and applications have been developed for these green composites in recent years.

Despite the great advantages of green composite materials, issues still exist. For natural fibres, they are less homogeneous than glass and carbon, tend to absorb moisture, and are less compatible with conventional resin systems. Preprocessing and treatment are thus required to enhance the performance of the composite solution. The development of bioresin is lagging behind the development of natural fibres. Adhesion and interfacial bonding between natural fibres and bioresin need to be addressed. This special issue will cover the latest progress in green composites fabrication, characterisation, testing, and applications. The future trends for the green composite development will also be discussed.

We welcome manuscripts that investigate the most recent advances in this field, including the development of green composite applications in building and construction, aerospace, automotive, renewable energy, and packaging.

Potential topics include, but are not limited to:

- Wood based composites
- Bamboo based composites
- Other plant fibre composites
- Bioresins and biopolymers derived from natural resources
- Fibre treatment and resin modification for biocomposites
- Cellulose and nanocellulose composites
- Green composite fabrication, characterisation, evaluation, and application

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Manuscript Due
Friday, 9 January 2015

First Round of Reviews
Friday, 3 April 2015

Publication Date
Friday, 29 May 2015