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Sustainable composites based on biopolymers and natural fibres

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The utilization of "bio-polymers" for production of bio-based composites has attracted interest of various application sectors ranging from packaging to automotive components and other high value applications. Advantages of natural fibres are their lightweight, relative cheapness, being bio-based, and the fact that they can compete well with conventional reinforcements such as glass and aramid fibres for terms of strength per weight of material. The strength of the bond between fibres and matrix is substantial for the best mechanical performances of a composite. Many factors interacting with each other affect the complex process of the fibre/matrix adhesion, which be influenced by the chemical nature of the polymeric matrix, manufacturing methods, processing parameters, surface modification of the fibres or by additives like adhesion modifier agents. For production of composites with bio based biodegradable polymers, it is important to address fibres pre-treatment and/or to use compatibilizing agents. These approaches are reviewed in the present contribute with reference on specific researches carried on in our laboratories.

Biography

Patrizia Cinelli has completed PhD in Chemistry at Pisa University partly performed at the United States Department of Agriculture (USDA), Peoria, IL, USA. She has over 20 years of experience in materials science, polymer processing and characterization, biodegradation and life cycle assessment. She is co-author of over 50 papers in peer-reviewed journal, 9 book chapters, and 8 patents on innovative materials. She is Assistant Professor of Applied Chemistry and Materials Technology at Master's Degree student program of Construction Engineering and Architecture at Pisa University. She has worked in over 15 EC project from FP5, FP6, FP7 and Horizon 2020, directly following technical management, proposal writing, scientific activity, and reporting.

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