

MATERIALS AND LIGHTWEIGHT STRUCTURES

Plants and animals have evolved over time to become very efficient in their exploitation of materials. Plants use cellulose fibres bonded by pectins as their structural support and at the end-of-life the materials decompose to contribute to the soil. Advanced fibre reinforced composites mimic this approach to produce strong/stiff and/or tough structures of very low weight in comparison to the traditional metallic engineering materials

However, the bulk of these composite materials utilise man-made fibres and synthetic resins which are a potential problem at the end-of-life. Animals have structures which can adapt (eg by selective bone necrosis) and repair (eg wound healing). These features would be especially welcome in critical transport structures. Biomimetics should provide appropriate models for the solution of these, and many other, issues in materials science and engineering.

Key links:

About Composites: <http://composite.about.com/index.htm?terms=composites>

National Composites Network <http://www.ncn-uk.co.uk/>

NetComposites – Guide to Composites:

<http://www.netcomposites.com/education.asp?>

Owens Corning - Composite Solutions <http://www.owenscorning.net/>

University of Plymouth - Composites design and manufacture

<http://www.tech.plym.ac.uk/sme/mats324/>