

New Lightweight Recyclable Polymer Composites of High Density Polyethylene

Zhi Cao, Athlone Institute of Technology, Ireland

Abstract. Due to increased legislation and penalties encountered by car manufacturers and consumers in relation to high fuel consumption vehicles there is an increasing need to lightweight various different car parts. The need to lightweight vehicles is highlighted in reports where it states that for every 100kg added to a vehicle, its fuel consumption is increased by 0.6 litres/100 km. In addition, the European Union (EU) wishes to limit the production of waste arising from end-of-life vehicles and to increase re-use, recycling and other forms of recovery of end-of-life vehicles and their components. With these constraints in mind the current study involves the light weighting of polymeric components in automobiles by the addition of natural fibres from renewable sources. In doing so, both the weight and cost of the products can be reduced. This will also have the added advantage that the end product can be recycled through granulation and remoulding, and at the end of its usefulness this material can also be incinerated.