

聚對苯二甲酸乙二醇酯 (PET) / 聚丙烯 (PP) 微纖維複合材料的研究

Study on Polyethylene terephthalate (PET) / Polypropylene (PP) Microfibrillar Composite

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作品簡介 Project Introduction

聚對苯二甲酸乙二醇酯 (PET) 和聚丙烯 (PP) 等使用後的廢料 (如塑料水或汽水瓶) 可能是形成聚合物的低成本材料來源。研究發現 PET 纖維的形成受低模溫度, 低機筒溫度和高螺桿速度的影響。在第二階段, PET / PP 混合物被固態拉伸以增加 PET 纖維的分子。單向複合材料由未拉伸和固態拉伸 PET / PP 擠出物壓縮成型。與未拉伸的擠出物相比, 模塑複合材料顯示出拉伸強度 (50-60%) 和模量 (~100%) 的改善。

Nowadays, there are considerable supplies of poly(ethylene terephthalate) (PET) and polypropylene (PP) in the form of postconsumer scraps such as plastic water or soda bottles. These wastestreams of PET and PP could be a low cost source of raw materials for forming polymer blends. A two-stage blending process was utilized to produce a microfibrillar composite of PET fibres in a PP matrix. Unidirectional composites were compression molded from both the undrawn and solid-state drawn PET/PP extrudates. The molded composite showed improvements on tensile strength (50-60%) and modulus (~100%) compared with the undrawn extrudates.



主要獎項 Major Awards

- 獲國際天文學聯會把編號 110074 小行星命名 「林俊禧星」(2010)
International Astronomical Union named the minor planet 110074 as "Lamchunhei" (2010)
- 第 61 屆英特爾國際科學與工程大獎賽 美國發明家聯盟特別獎
The 61st Intel International Science and Engineering Fair (2010) --- Second Place Award in the category of Engineering
- 2009 年臺灣國際科學展覽會 二等獎
Taiwan International Science Fair 2009 - Second Place award
- 第 8 屆明天小小科學家獎勵活動 三等獎
The 8th Future Young Scientist Award Program (2008) --- Third Place Award
- 第 22 屆全國青少年科技創新大賽(2007) -- 二等獎、科學 DV 數碼影像委員會獎
The 22th China Adolescent Science and Technology Innovation Contest(2007) --- Second Place Award in the category of Science and Technology Innovation Achievements, Special award of Science DV digital committee
- 第 9 屆香港青少年科技創新大賽 06-07 二等獎、個人創作大獎(中學)
The 9th Hong Kong Youth Science & Technology Innovation Competition (06-07) --- Second Place Award in the category of Science and Technology Invention, Young Inventor award(Secondary)