

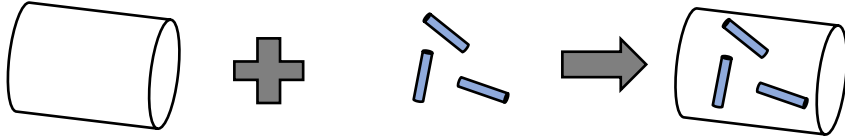


背景

熱可塑性樹脂

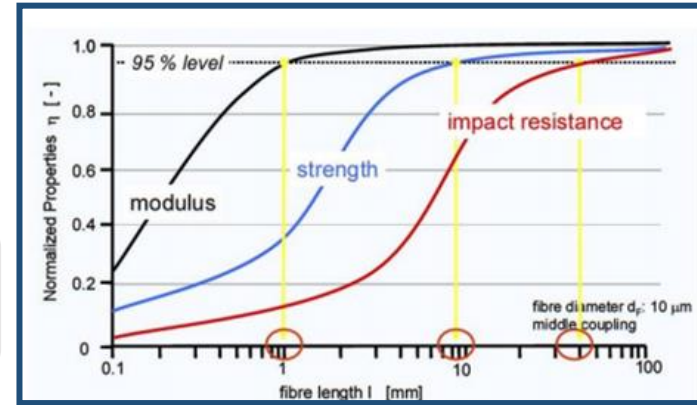
強化繊維

繊維強化熱可塑性樹脂 (FRTP)



機械的特性が良好
- 軽量
- 高強度

FRTPの成形品は含まれる繊維長が長くなると、ピークとなる繊維長までは機械的特性が向上
しかし、成形過程で繊維折損が生じ強度低下等の不良が発生



M.Scheme, Industry survey and material basics of LFT-Materials, processes and fundamental properties of LFT, EATC Automotive Seminar(2006)

目的

二軸押出機を用いた混練プロセスにおける炭素繊維を対象として

01. 樹脂粘度と繊維折損の関係の解明

02. フルフライトスクリュとニーディング部での繊維折損を予測する技術の開発

実験装置



11mm二軸押出機

Thermofisher
Thermo Scientific HAAKE Process 11



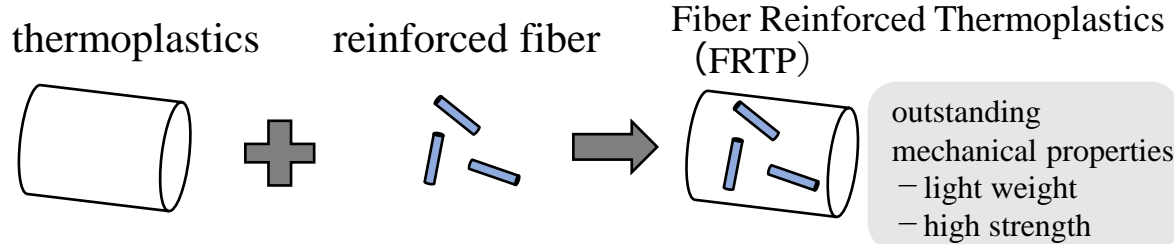
18mm二軸押出機

Coperion
ZSK18 | co-rotating twin-screw extruder

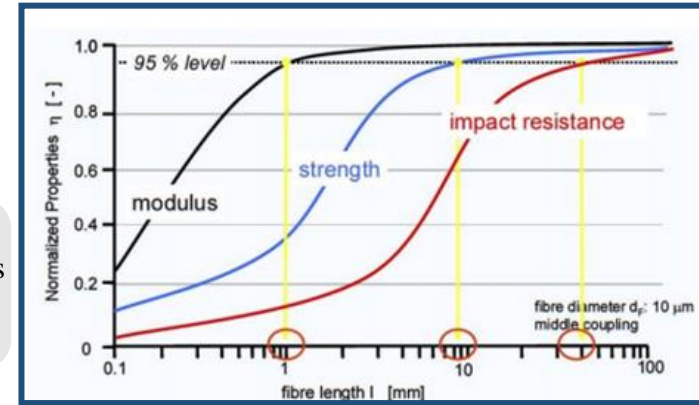


Study on the behavior of carbon fibers in the molding process using twin-screw extruders

Backgrounds



As the fiber lengths contained in FRTP moldings increase, the mechanical properties improve up to the peak fiber length. However, fiber breakage occurs during the molding process, resulting in defects such as reduced strength.



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Objectives

on carbon fiber compounding process using twin-screw extruders (TSEs)

01. clarifying the relationship between resin viscosity and fiber breakage
02. development of numerical modeling to predict fiber breakage in full flight screws and kneading blocks

Experimental devices



11mm (diam.) TSE

Thermofisher
 Thermo Scientific HAAKE Process11



18mm (diam.) TSE

Coperion
 ZSK18 | co-rotating twin-screw extruder