fibers

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Special Issue Reprint

Glass Fibers 2018

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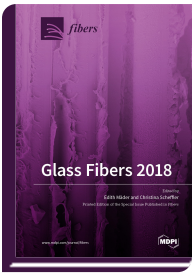
Edited by
Edith Maeder
Christina Scheffler



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Glass fibres are melt-spun, silica-based inorganic materials. Their main application is in glass fibre-reinforced composites, which account for more than 90% of all fibre-reinforced composites currently produced. Nevertheless, improvement of the key properties of composites remains challenging. The objective of this reprint is to focus on actual research topics related to glass fibres comprising multifunctional nanostructured surfaces, e.g., graphene, which can lead to electrically conductive fibres and their interphases in composites that are capable of uptake under a variety of mechanical, chemical, humidity, and thermal conditions for in situ sensing functions. Sizing of glass fibres help to protect the filaments from failure during processing and improves wetting and adhesion strength. Furthermore, the interphase may be varied by suppressing or promoting heterogeneous nucleation of a thermoplastic matrix and, thus, the transcrystalline layer can improve the mechanical performance. Improved interfacial shear strength was shown with chitosan as a coupling agent in phosphate glass fiber/polycaprolactone composites. Modulus mapping of plasma-synthesised interphases in glass fibre/polyester composites was used to examine the local mechanical properties across the interphase region. In addition, numerous analytical techniques were applied to investigate changes within the surface of unsized boron-free E-glass fibers after thermal conditioning at temperatures up to 700 °C.

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