

HiPerDuCT Programme Grant

Final report: Ductile Carbon Nanotube Fibre Composites

Carbon nanotube fibres can show high strains and ductility, with scope to create ductile composites. Single CNT fibre fragmentation tests with a model high strain matrix of polycarbonate were carried out. It was shown that it is possible to achieve a high performance CNTF/Polymer interface by careful consideration of interface morphology [1]. An interfacial shear strength of 50 MPa, with adhesion maintained at very large strains of up to 13% was successfully demonstrated, offering the possibility of exploiting the mechanical and functional performance of CNTF in high performance ductile polymer composites.

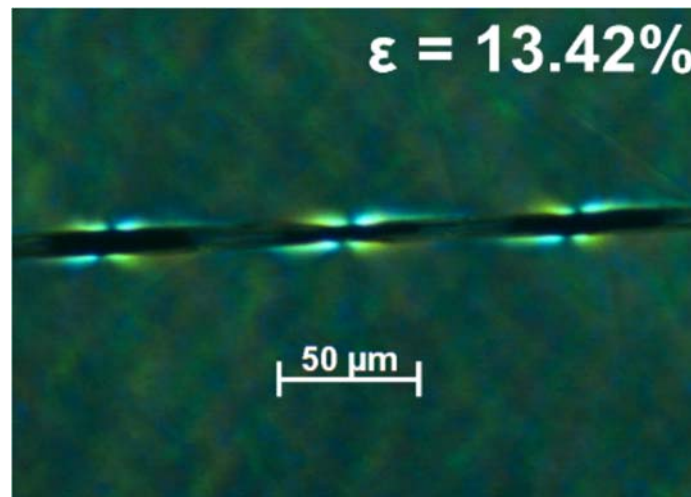


Figure 1. Birefringence patterns indicating continued adhesion at very high strain

References

[1] Trevarthen MJ, Janas D, Wisnom MR, Rahatekar S, Koziol K. Interfacial characterisation and optimisation of carbon nanotube fibres. *16th European Conference on Composite Materials (ECCM16)*, Seville, Spain, 22-26 June 2014.