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Short Communication

Fracture toughness of reinforced epoxy aluminum composite

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ABSTRACT

Epoxy was reinforced using aluminum micro and Nano-particles through in-situ polymerisation. Morphological and fracture toughness properties were studied via experiments and models. Results obtained indicated degradation in the fracture toughness of the reinforced epoxy composites above 6% by weight of aluminum micro-particle additions. Optical and scanning electron microscopes revealed fracture mechanism by repeated plastic deformation at the crack front, crack growth, deflection and pining. The model indicated that aluminum weight percent ($p = 2.48 \times 10^{-5}$) has a higher significant influence on the composite fracture toughness than aluminum particle sizes ($p = 4.12 \times 10^{-5}$).