

An Investigation of Fatigue in Polymer/Metal Composites

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Abstract

The fatigue behavior of Fe-Ni-base metal/polymer composites is discussed in this paper. These are proposed as self lubricating surfaces with the potential to replace conventionally lubricated pistons in automotive engines. Following a description of composite microstructure and basic mechanical properties, the paper examines the effects of polymer volume fraction on long fatigue crack growth. The effects of temperature on fatigue crack growth are then elucidated before presenting some initial fracture mechanics concepts for the prediction of fatigue life. The implications of the results are assessed for the design of durable surfaces.