

Micromechanics Modelling for Fatigue Analysis in Particulate Composites

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Much of the development of Metal Matrix Composites has been on monolithic lightweight alloys having inadequate fatigue resistance for many demanding applications. The use of a high stiffness ceramic reinforcement in particulate form, such as SiC, can result in a substantial increase in fatigue resistance while maintaining cost at an acceptable level. The fatigue resistance of particulate MMCs depends on a variety of factors, including reinforcement particle volume fraction, particle size, matrix microstructure, the presence of inclusions or defects that arise from processing, and testing environment. In this research the effect of these factors on the fatigue behaviour of particle reinforced MMCs is looked at while concentrating on stress versus cycles (S-N) fatigue behaviour. A unit cell model is used for simulation in ANSYS.

Keywords: Micromechanics, Fatigue Analysis, MMC's, Particulate, Unit Cell

Biography:

Dr. Syed Asim Ali Shah has completed his PhD from Sheffield Hallam University, United Kingdom. He specializes in Simulation and Modelling and is currently serving as a Senior Assistant Professor at Bahria University, Islamabad, Pakistan. He has published more than 25 papers in reputed national and international Journals and Conferences and has been serving as an editorial board member of repute. He is also a member of the National Think Tank for Robotics for Pakistan.