

Stress Field Induced By an Interfacial Edge Dislocation in a Multi-Layered Medium

Authors : Aditya Khanna, Andrei Kotousov

Abstract : A novel method is presented for obtaining the stress field induced by an edge dislocation in a multilayered composite. To demonstrate the applications of the obtained solution, we consider the problem of an interfacial crack in a periodically layered bimaterial medium. The crack is modeled as a continuous distribution of edge dislocations and the Distributed Dislocation Technique (DDT) is utilized to obtain numerical results for the energy release rate (ERR). The numerical results correspond well with previously published results and the comparison serves as a validation of the obtained dislocation solution.

Keywords : distributed dislocation technique, edge dislocation, elastic field, interfacial crack, multi-layered composite

Conference Title : ICAMME 2015 : International Conference on Applied Mechanics and Mechanical Engineering

Conference Location : Stockholm, Sweden

Conference Dates : July 13-14, 2015