DISCUSSION

Muzaffer Sutcu[1] (*written discussion*)—(1) Does your unit cell finite element allow relative slippage between the fiber and the matrix? (2) Is the tensile strain of the fiber and the matrix the same?

D. A. Hopkins and C. C. Chamis (*authors' closure*)—(1) In the finite element model of the square array unit cell, no special provisions are made to directly allow relative slippage between fiber and matrix (such as the use of duplicate nodes to relax continuity or the use of gap elements). However, the existence of incomplete bonding could be simulated by assigning essentially "zero" stiffness properties to one or more of the elements representing the interphase zone. (2) In the theoretical development of the micromechanics equations the assumption is made that complete bonding exists between fiber and matrix. Enforcing displacement compatibility in the *longitudinal* (parallel to the fiber) direction, then, results in equal strains for the constituents and ply.

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