1116-86-1877 **D. Sulsky***, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, NM 87131, and **H. Tran** and **H. Schreyer**. *A multiscale, anisotropic, elastic-decohesive constitutive relation for modeling sea ice.*

Satellite imagery indicates that much of the winter Arctic ice deformation is concentrated in linear features, like cracks. The aim of this research is to build on a previously formulated elastic-decohesive constitutive model that predicts the initiation, orientation and extent of cracks and tie it more closely to the thermodynamics and the distribution of ice thickness. The classical rule-of-mixtures is applied for the ice 'composite' having an oriented distribution of thickness to derive the moduli and the strengths of the equivalent material. At failure, a decohesive constitutive relation based on the traction on a potential crack plane is employed in the anisotropic material. Examples are given to illustrate aspects of the model when simulating the failure of sea ice. (Received September 21, 2015)