1097-45-359 **Gunduz Caginalp*** (caginalp@pitt.edu), **Xinfu Chen** and **Emre Esenturk**, , South Korea.

Phase Field Models: Macroscopic Anisotropy and Non-Local Models.

Establishing the connection between macroscopic anisotropy and microscopic interactions is of both theoretical and practical interest. The phase field approach can be used in different ways in order to facilitate this link. One of these involves the use of integral equations, which also permits an understanding of non-local interactions. The technique allows one to derive macroscopic conditions at the interface from the microscopic potentials. Differential geometry and asymptotic analysis yield interface conditions in arbitrary spatial dimension. The interface condition can be expressed in various mathematical formulations, e.g., in terms of the principal curvature directions of the interface, or the second order directional derivatives of the interface and the Hessian of the surface tension. (Received January 27, 2014)