Meeting: 1004, Bowling Green, Kentucky, SS 13A, Special Session on Nonlinear Analysis and Applied Mathematics

1004-35-82 **Bo Su*** (bosu@iastate.edu), Department of Mathematics, Iowa State University, Ames, IA 50011. *The Existence of Weak Solutions of a Polymer Crystal Growth Model.*

The aim of this talk is to show the global existence of weak solutions for a moving boundary problem arising in the nonisothermal crystallization of polymers. The PDEs is a singular parabolic equation for temperature coupled with level set equations for phase. Local existence of smooth front was proved by A. Friedman and J. Velzquez in case initial front is a small perturbation of sphere. Here we show temperature is Holder continuous and moving front is Lipschitz graph for arbitrary large initial data. Note that, in the isothermal case- the classical Stefan problem, the codimension one property of the moving front is still an open problem. (Received January 18, 2005)