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Nicholas O. Kirby* (nicholas.kirby@uky.edu). *Continuum equations from a model of step-flow.*

In the step-flow regime a crystal surface consists of flat regions, called terraces, separated by steps of atomic height. These steps move due to the attachment of atoms from the adjacent terraces. We present a model of this process in which step motions automatically satisfy the second law of thermodynamics. This model includes a coupling between adjacent terraces that is diffusive. Since the simulation of a large number steps can be computationally expensive, it is of interest to find a model in which the crystal surface is governed by a partial differential equation (PDE). We present the continuum limit of the step-flow model under consideration. The coupling at the step-flow level leads to a continuum model which takes the form of a system of PDE. (Received September 22, 2011)