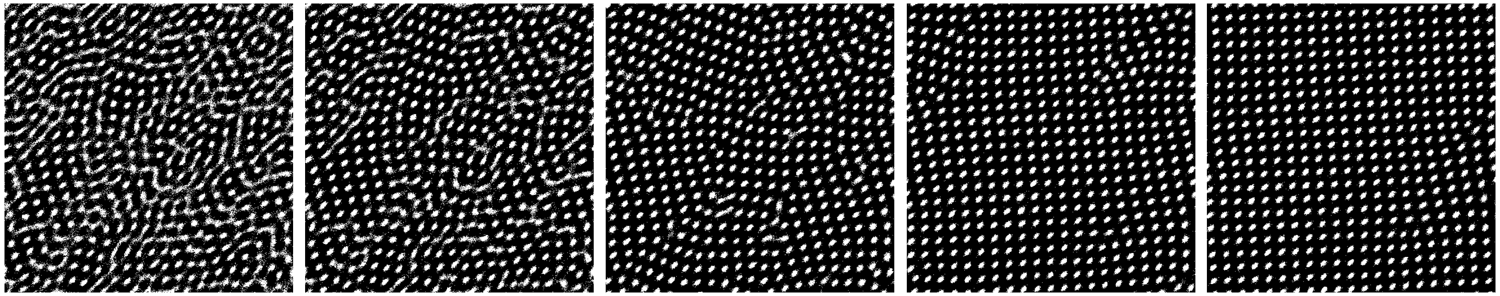
Lattice-Gas Models of Crystalization and Elastic Solids

Jeff Yepez—a U. S. Air Force scientist working with the MIT CAM-8 group—has developed revolutionary new models of crystalization and elastic solids. These models are discrete versions of molecular dynamics, in which

- mass, energy, momentum, and angular momentum are all exactly conserved
- particles move only in a few discrete directions, at a few discrete speeds
- forces between particles act only in a few discrete directions, at a few discrete distances



Crystalization of a lattice gas into an elastic solid.

IMPACT

These very recent results differ from conventional molecular dynamics simulations in that they involve no arithmetic calculations, and they take into account full n-body correlations. They have the potential to revolutionize several areas of materials modeling, including

- Simulation of binary alloys
- Simulation of crystal growth