

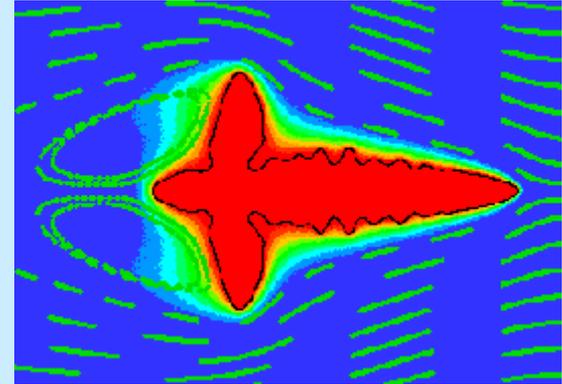
Microporosity Formation in Alloy Solidification

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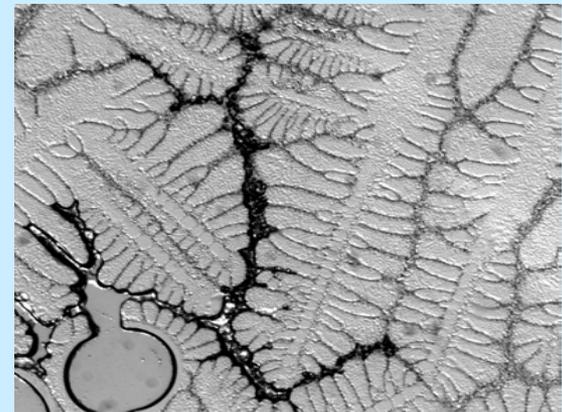
Microporosity is a defect present in most metal castings, including aluminum parts used in the aerospace and automotive industries, superalloy turbine blades used in jet engines, etc. It dramatically reduces ductility and fatigue life. We attempt to increase present understanding of microporosity formation by:

- ◆ developing a model for simulating the evolution of the solid microstructure and pores and their interaction
- ◆ observing microporosity formation in-situ using transparent model alloys

Knowing the final shape of pores in metal castings allows for an assessment of their effect on the service performance of parts.



Phase-field simulation of 2-D dendritic growth with forced convection



Microporosity in SCN-3wt%acetone