DEC 05 2018

Experimental Mechanics Final Presentation

- Slide Outline First
- Break outline into dendritic growth has no good analogue in the physical process of Laser Metal Project. Modulii of the steel very hard.
  + Need Supporting Equations from some site
  + A couple of slides?
  + Compare scale of dendritic growth to minimum length scale of the FEM

  } Problem
- Set Up with: FEM Research process on pg (2)
  + Processes of Dendritic Growth linked to solidification of both binary and multicomponent liquid, examples like ice, ...
    i) Base Liquid
    ii) Solid Nucleus of Spherical Shape grows into the liquid
      - Begin in the free vacuum or (free growth)
    iii) Liquid Solid Interface grows where regions befor the boundary becomes super-cooled
      - There is a great visualization video in 3D → gif
      - Note how the boundary is not a clean line but weather
      - Relate to "ϕ" or state parameter and phase field approach
      - Graph of the State as a product of the environment
    iv) Its distinctive shape comes from how the crystal anisotropy allows for solidification in energy favorable direction
      - State → Propogates in shape preserving manner → "dot ~~of~~ flux?"
      - Energy favorable directions
      - As the dendrite growth goes on, heat energy goes into the dendrite