

Investigation of Phase Relations and Reaction Pathways in Pnictide Superconductors

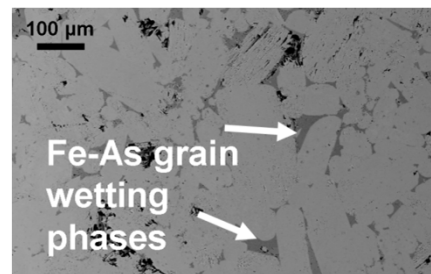
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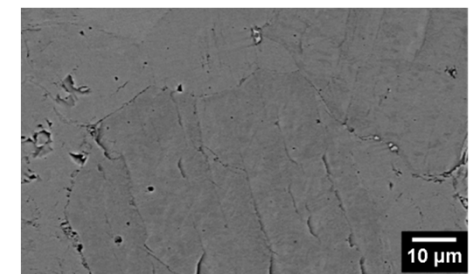
- Useful superconductors have to transport current across grain boundaries
- Study intrinsic properties of grain boundaries (GBs)
 - Bicrystals – UW-Madison
 - Polycrystalline bulk - FSU
- Use phase diagrams and reaction pathways to control GB phases
- Understand current transport in a new class of superconductors
- Jorge Gonzalez (REU, UPRM) refurbished old DTA for phase studies

(Ba,K)Fe₂As₂ bulk has better GB properties than cuprate superconductors

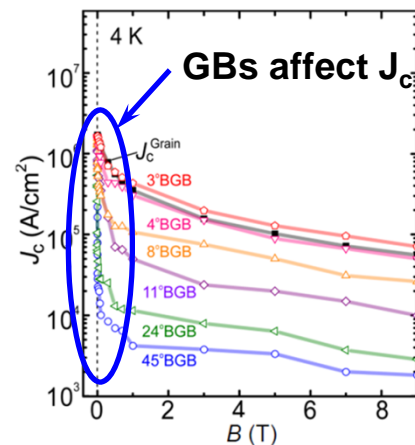
Standard processing – simple grinding, high temperature reaction



New reaction pathway – high-energy milling, multiple, low-temp reactions



Ba(Fe,Co)₂As₂ bicrystals – J_c decay increases with GB angle



(Ba,K)Fe₂As₂ bulk and wire – do not show large J_c decay

