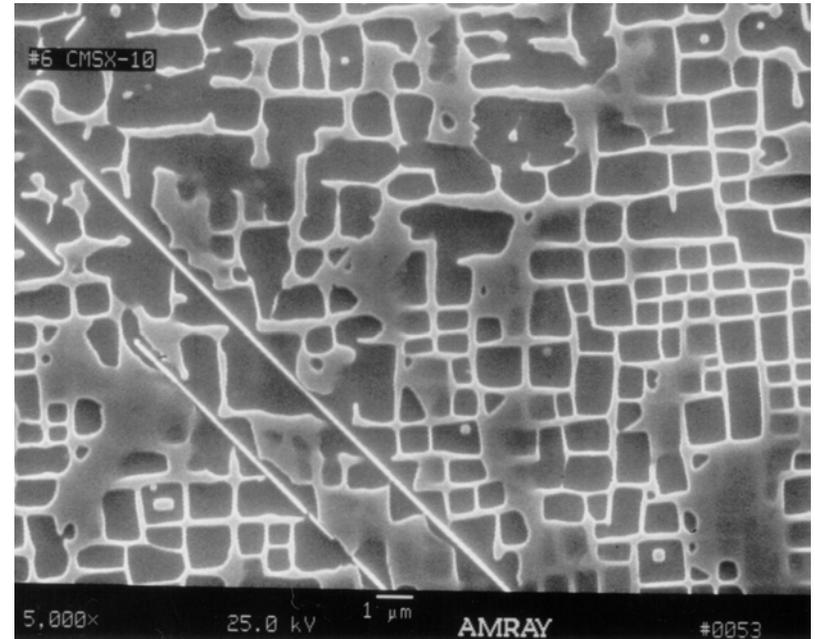


Stability of Ni-Based Superalloy Single Crystals (GOALI with Pratt & Whitney)

G.E. Fuchs, University of Florida, DMR Grant Number 0072671

- Graduated
 - Undergraduate Students
 - » B. Wilson and J. Hickman
 - MS Students
 - » F. Fela and V. Acharya
 - PhD Students
 - » K. Al-Jarba
- Current Students
 - 2 MS, 1 PhD and 3 BS
- 4 papers published in 2003
- 2 students given TMS Superalloys Scholarships based on work from this project.
- Results from this project assisted in development of several new proposals including for NSF US/European collaboration.



CMSX-10 Long-term stability sample showing precipitation of TCP phase which resulted in degraded properties



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■ Outreach

- Students visited local elementary schools to give presentations and demonstrations on materials science.
- K-12 students worked in lab during summers as part of UF sponsored program (CPET)
- Middle school students performed hands-on experiments to fulfill laboratory course requirements.
- Taught short courses at Siemens Westinghouse, Howmet and DNV.



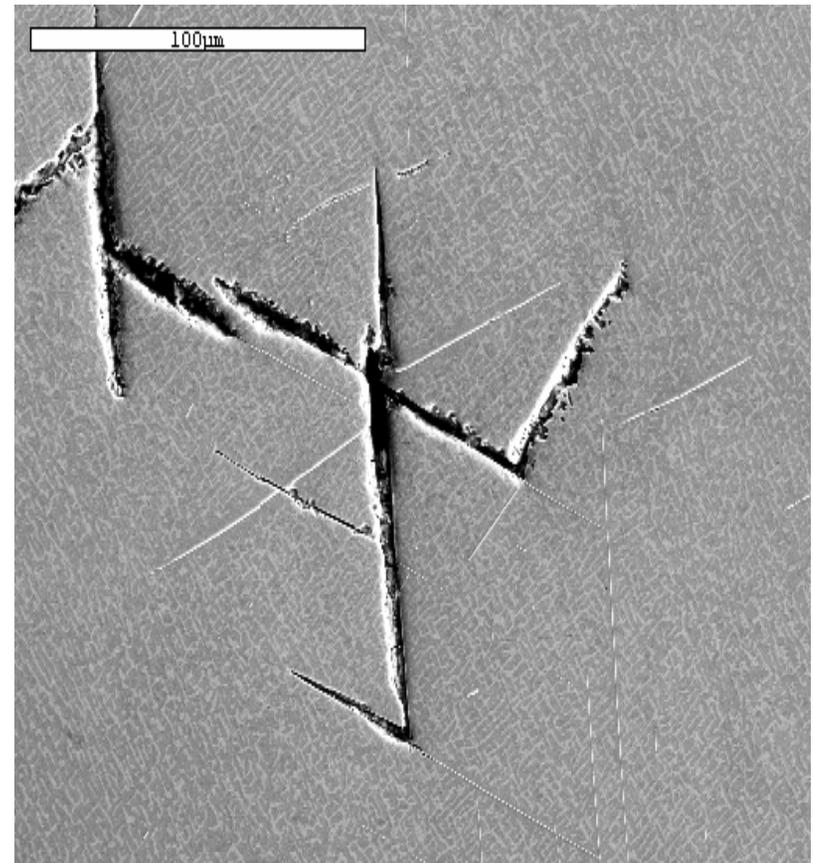
Grad student demonstrates measurement of temperature and effect of temperature on properties to students in 3rd grade science class



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- The stability of Ni-base superalloys is a critical issue for the increased performance and efficiency of gas turbines.
- This project has provided a better understanding of the effects of microstructural evolution on the properties of single crystals.
- A better understanding of the effect of composition on the castability and properties of single crystal superalloys has also been demonstrated.



The presence of TCP phases resulted in significant amounts of cracking within the sample tested.

