The Macrogram

MONTHLY MEETING – TOPIC
February 12, 2013
Topic: Development of Gamma TiAl for Aerospace Engines
Speaker: Gopal Das, PH.D. Pratt & Whitney

Directions: Margaritas Mexican Restaurant - 350 Roberts St., East Hartford, CT, Ph: (860) 289-7212
I-84 Exit 58 Roberts Street: From the East, turn right onto Roberts St. and the restaurant is immediate on the left. From the West, turn left on to Robert St. and after the first light the restaurant is immediate on the left.

Agenda:
Cocktails: 5:30-6:30 PM
Dinner: 6:30-7:30 PM
Program: 7:30-8:30 PM

Program Charges:
Regular Members - $28
Young Professionals - $20
Retirees - $15
Full Time Students - $15

Technical Chairperson: Sam Christy
Reservations: Call Linda at Service Steel Aerospace 203-906-6381 or lthomas@ssa-corp.com by noon February 8th! Thanks!

Abstract:
The improvement in the reliability, lifetime, and efficiency of new generation Gear Turbo Fan jet engines calls for the design of materials that can perform and survive in the pressure, strain rates, and temperature extremes demanded. Recent advancements in the production of wrought gamma TiAl introduces a wider range of materials properties and materials behavior, due to their low density, good elevated temperature mechanical properties, and oxidation and burn resistance, that create promising opportunities in the design of turbine components to meet these demands. The talk will highlight the capabilities and advantages enabled through the development of production processes involving a new betastabilized gamma TiAl alloy called TNM alloy for potential application in advanced gas turbine engines.

Bio:
Dr. Gopal Das holds a B.S. in Metallurgy from Calcutta University, and an M.S. and a Ph.D. in Materials Science and Engineering from Case Western Reserve University in Cleveland, Ohio. He has over 40 years of experience in the research and development of Metallurgy and Materials Science with more than 100 publications and several patents to his credit. His M.S. thesis explored fatigue behavior of cast steel while his Ph.D. thesis investigated the mechanical properties of hafnium single crystals. As a post-doctoral research associate, he was involved in radiation damage studies in metals and ceramics using high voltage electron microscopy (HVEM). He spent two years at the Max Planck Institute in Stuttgart, Germany where he studied the annealing behavior in electron-irradiated cadmium inside a HVEM. At WPAFB he worked on TiC, Si3N4, and metal matrix composites including various titanium alloys. He also spent five years establishing a facility to manufacture silicon single crystals and wafers (first of its kind in India). Since joining P&W in 1992, Gopal has been involved in the development of sheet gamma TiAl technology under the NASA-sponsored EPM/HSCT program and has successfully fabricated and tested sheet-based divergent flaps for the HSCT engine. Under the USAF-sponsored IHPTET program, he has forged the largest PM-based gamma TiAl disk ever produced in the world. At present, he is involved in a joint technology collaboration program with MTU, Germany to produce wrought gamma TiAl LPT blades for P&W Gear Turbo Fan (GTF) engines. In addition, he has successfully completed a program on transient liquid phase joining of Ni-based superalloy single crystal blades to superalloy disks. Over the years he has received numerous awards for his work.

Future ASM Hartford Meetings

May 14, 2013 – ASM Trustee Visit

Topic: Engineered Coatings Using Pack Cementation Processes
Speaker: Dr. Vilupanur Ravi, FASM
ASM Trustee (2010 - 2013)
Professor and Chair Chemical & Materials Engineering Department, Cal Poly Pomona