Electron Beam welding has been in commercial use for six decades and is still one of the most precise and flexible welding processes available. It was first used in the aerospace and nuclear industries because of its ability to weld materials that would rapidly oxidize if welded using conventional arc welding methods. Aerospace is still a major user of electron beam welding technology, but many other industries including industrial turbines, oil & gas equipment, semiconductor, defense, electronics, medical and automotive industries also use the technology. Most people have electron beam welded items such as automotive transmission gears or bimetal saw blades in their home or garage.

The process is known for its:

- Low heat input and minimal thermal distortion
- Ability to produce deep welds (up to 5" in steel with a single pass)
- High depth to width ratio welds (>20:1 is possible)
- Ability to weld high conductivity and highly reflective materials such as Al and Cu
- Cleanliness of the welds due to the vacuum environment
- Ability to weld dissimilar materials, usually with no filler material

This presentation will provide a description of the EB welding process, types equipment, applications from various industries and recent advances including high speed deflection that permits “multi-beam” processing.

John Rugh is the Marketing and General Sales Manager for PTR-Precision Technologies, Inc. in Enfield, CT. He has 30 years of experience in electron beam and laser welding, coating, cleaning, heat treating and inspection techniques used to manufacture components used in aerospace, industrial turbines, oil and gas, automotive, semiconductor equipment, medical and sensor industries. Prior to joining PTR in 1995, John worked as a process engineer the Chemical, Metallurgical, and Welding group at Pratt & Whitney in Middletown, CT and the Engineered Coatings group that spun off from the United Technologies Research Center. He received his BS in Metallurgical Engineering from the University of Pittsburgh and his MBA from Rensselaer Polytechnic Institute.
My name is Ray Engelhardt and I have been the vice-chairman for three years now. This summer I attended ASM Leadership days in Cleveland Ohio and would like to take the chapter in a new direction. Specifically I would like to increase our active membership to the point we can begin outreach programs such as ASM training courses and ultimately an ASM Materials camp.

We have a small group of very enthusiastic students and recent graduates from the CSUN material engineering program and have created a plan for the 1, 3 and 5 year time frames. What we need are more volunteers to make this plan successful. Leadership positions are available for undergraduate students, graduate students, seasoned professionals and educators. We also need feedback on how the chapter is being run specifically what events you would like to have planned.

In the very near future the chapter website will be back up and current. We are working on a chapter Facebook page. We are in desperate need of a newsletter editor.

Below are the goals we agreed on. Please feel free to provide feedback and volunteer to make these plans possible.

Chapter Plans and Goals

1 year
- 30 new Materials Advantage members (Student Memberships)
- 20 professional members at each meeting.
- 4 new sustaining members (Corporate memberships)
- Organize an annual summer bowling social event.
- Create an organized system to connect our sustaining members with students for internships and research project.
- Provide leadership opportunities for students.

3 year
- 100 new Materials Advantage members (Student Memberships)
- 30 professional members at each meeting
- 12 new sustaining members (Corporate memberships)
- Conduct ASM continuing education classes.
- Expand the system to connect our sustaining members with students for internships and research project.
- Provide leadership opportunities for students.

5 year
- 250 new Materials Advantage members (Student Memberships)
- 50 professional members at each meeting.
- 12 new sustaining members (Corporate memberships)
- Conduct a ASM Materials camp for high school students
- Expand the system to connect our sustaining members with students for internships and research project.
- Provide leadership opportunities for students.
Directions
The meeting room is the Lake Balboa room. Enclosed are a general campus map and a detailed map of the Plaza del Sol.

Directions.
1. See general campus map.
2. Enter campus from Zelzah Ave at Prairie Street (G3)
3. Purchase a day pass for $6 at the booth.
4. Turn right on Matador Drive and enter lot G4 by turning right (G4). In the evening parking is always easy to find in this lot.
5. Walk around the SRC (student recreation center) South on Matador and around the building.
6. Walk west into the plaza toward the USU (University Student Union) (F4)
7. See detailed Plaza del Sol map.
8. The Lake Balboa room is between the ticket office and the USU Sol Center on the first floor.
9. My cell number is 661-644-1029 if you need assistance