Brightening Yellow Metals: Removing Tarnish and Oxidation
Session Questions and Answers

Q: How can I protect my parts from oxidizing further or re-oxidizing?

A: That's a good question. As I mentioned, copper is really reactive. It looks bright and shiny the moment we take it out of the acid and let it sit there the next day or over the weekend, then all of a sudden that part is dark again. It's going to react even with the oxygen and the water vapor in the air. There are some great industrial RP's and corrosion protectors for that. Benzotriazole is really a tried and true process. Also, KYZEN is actually doing research on the semiconductor industry. Copper plating and copper-based parts in semiconductors in pads on circuit boards are really important. I would stay in touch with your local KYZEN representative to see what is coming down the line because that always filters down into your regular industrial process. There are great market ones out there now.

Q: Do any of these processes contain chromium?

A: No and that is an important question. Another type of bright dipping process that we really stay away from is the chromium dip. That's because hexavalent chromium is nasty and toxic. It's also hard to dispose of. You can do that, but that is not what we're focused on today. That is because it's just not leaning great. Citric acid is the leanest and greenest. Even the acid peroxide bright dips are significantly better than dealing with hexavalent chromium. That's something that I recommend staying away from unless you absolutely have to do it.

Q: What are typical concentration and cycle times for citric acid processes?

A: What I really like to do is run at about 10-15%, depending on how much oxidation you've got and about 140. I don't like to go much higher than 140, even 120 is OK. It depends on what alloy you're looking at. Copper tends to be OK; brass will actually darken up with heat. You want to keep that temperature down. Cycle times are generally about 10 minutes. Again, that's really dependent on the level of oxidation you've got but for the most part within 10 minutes we can remove anything that the citric acid is going to remove.