Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Induced Magnetic Behavior and Anomalous X-ray Fluorescence Spectra of Thermally Tailored Copper PATRICK BRADLEY, CLAIRE CHANENCHUK, CHRIS NAGEL, Continuum Energy Technologies — When a high purity (>99.98 wt%) copper ingot was melted, subjected to high temperature thermal cycling including rapid electromagnetic field oscillation (thermally tailored), the resultant solidified metal exhibited unexpected magnetic regions with unique spectroscopic behavior. A high-resolution magnetic microscope was used to provide current density imaging with resultant surface mapping of magnetic fields of the magnetically active regions on the copper ingot. Energy-dispersive, X-ray fluorescence (XRF) analysis of the magnetic regions exhibited energy emissions inconsistent with the known starting composition of the material. An analysis of the magnetic field and XRF data shows them both to be a result of the tailoring process and eliminates the possibility of causation by impurities accumulated during the process.

Patrick Bradley
Continuum Energy Technologies

Date submitted: 20 Nov 2010 Electronic form version 1.4