CLEMEX
Image Analysis Report

Application Bulletin # 130
for Metallurgy

GRAIN SIZE CHARACTERIZATION IN ALUMINUM ALLOYS

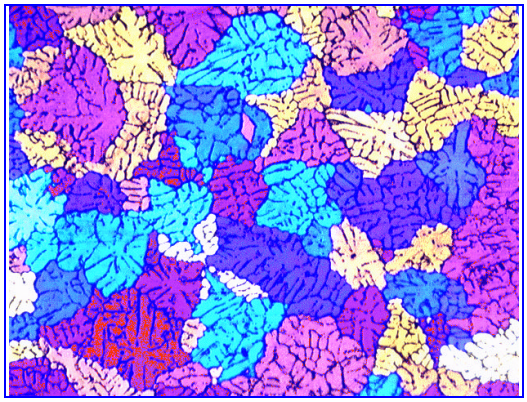

Figure 1: *Original image.*

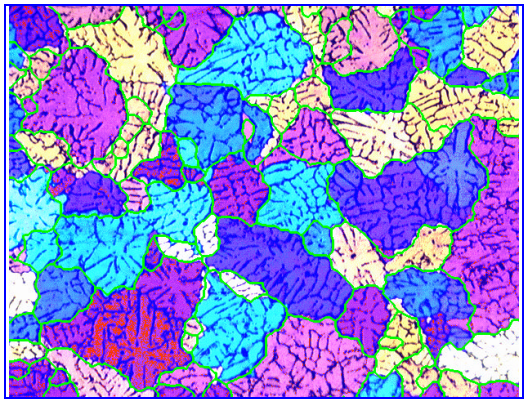

Figure 2: *Grain outlines overlaid against the original image.*

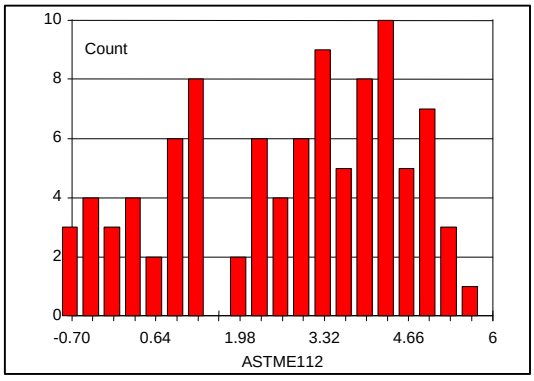

Figure 3: *Grain size distribution.*

Sample Description

One sample of anodized aluminum observed with polarized light.

Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analyzer to discriminate all grains in the field of view and, perform grain size and shape measurements.

Procedure

Color filters are used to eliminate the internal dark divisions of grains. A Color Gradient is applied to highlight grain boundaries prior to binarize them in red using Watershed instruction. The boundaries are inverted and spread to their full size using zone binary tool. Measurements are performed on solid grains.

Apparatus

Image Analysis System:	Clemex Vision Software
Microscope:	Nikon Epiphot 200
Camera:	Sony RS170 RGB High (624X480) Color
Objective:	Nikon 5x
Stage:	Marzhauser EK8B-S1

Results Summary

	Grain Size
Minimum	-0.68
Maximum	5.67
Rating	2.39