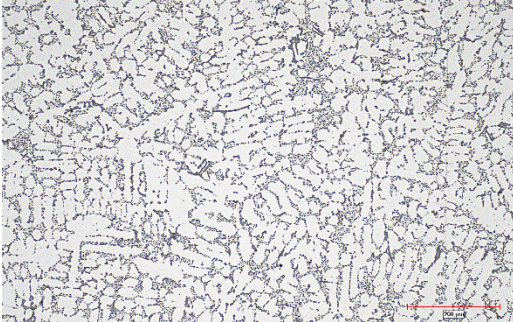


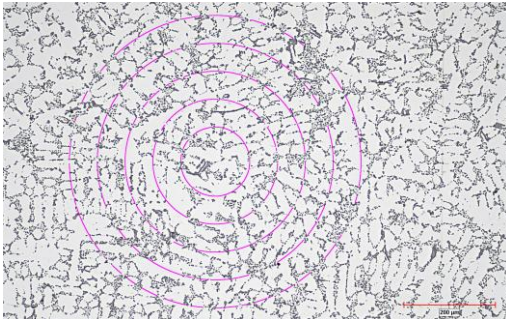
## MEAN LINEAR DENDRITE SPACING IN ALUMINUM ALLOY



**Figure 1a:** Original image at 100x.

### Procedure

In the current analysis, the length of the five overlaid concentric circles is measured and the measured length being used for the dendrite cell spacing calculation. Mean linear dendrite spacing calculation is performed using a visual basic macro in Excel.



**Figure 2a:** The blue bitplane is thinned to obtain the center between cells. A Pause Edit Line allows the user to draw properly oriented lines (green) over the dendrites.

### Sample Description

A cast aluminum alloy is submitted.

### Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analysis system with mean dendrite arm spacing module to detect and measure the mean linear dendrite spacing via an innovative & automated methodology.

### Equipment

|                               |                       |
|-------------------------------|-----------------------|
| <b>Image Analysis System:</b> | Clemex Vision         |
| <b>Microscope:</b>            | Nikon LV100           |
| <b>Camera:</b>                | Sentech STC-MCS231U3V |
| <b>Magnification:</b>         | 100X                  |
| <b>Stage:</b>                 | Motorized Marzhauser  |

### Results

Well polished surface is essential to minimize the influence of scratches when identifying the cell intervals. Analyzing multiple fields could give more representative results.

| Sample ID                                | Example     |
|------------------------------------------|-------------|
| Micro Number:                            |             |
| Magnification:                           | 100x        |
| Number of Fields:                        | 64          |
| <b>Average DCS (μm)</b>                  | <b>38</b>   |
| Standard Deviation                       | 2.0         |
| 95% Confidence Interval                  | 0.5         |
| <b>Area Percent Eutectic</b>             | <b>36.9</b> |
| Standard Deviation                       | 1.1         |
| 95% Confidence Interval                  | 0.3         |
| Average Dendrite Arm Aspect Ratio        | 1.6         |
| <b>Mean Linear Dendrite Spacing (μm)</b> | <b>19</b>   |
| Standard Deviation                       | 0.9         |
| 95% Confidence Interval                  | 0.2         |