JM CANTY

BEAD GROWTH MONITORING IN PROCESS

Objective:
This report details the particle size measurement of polystyrene beads suspended in a solution.

Test:
Testing was done using the Canty Microflow system. The Microflow system creates the same particle presentation and illumination field as the Canty Process Microscope which would be the preferred instrument for in process use. The product sample flows though the cell and is backlit over a thin adjustable gap which is set to approx 2-3 times the size of the largest particle. The software used is a Canty developed algorithm that is able to pull out particle information from “clean” and “murky” images.
Three samples of polystyrene beads (different particle size ranges) were suspended in water at different concentrations.

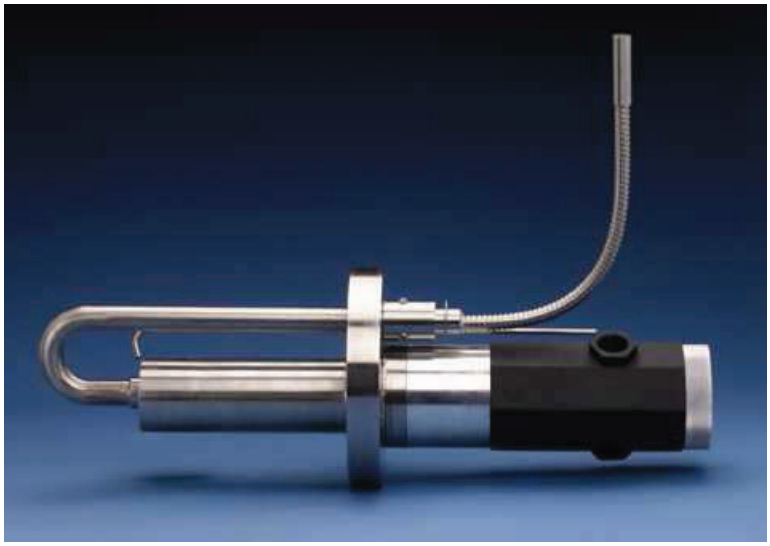

Figure 1 Canty Procees Microscope

Results:

TEST 1

Sample 1

20% concentration of Polystyrene beads suspended in water.

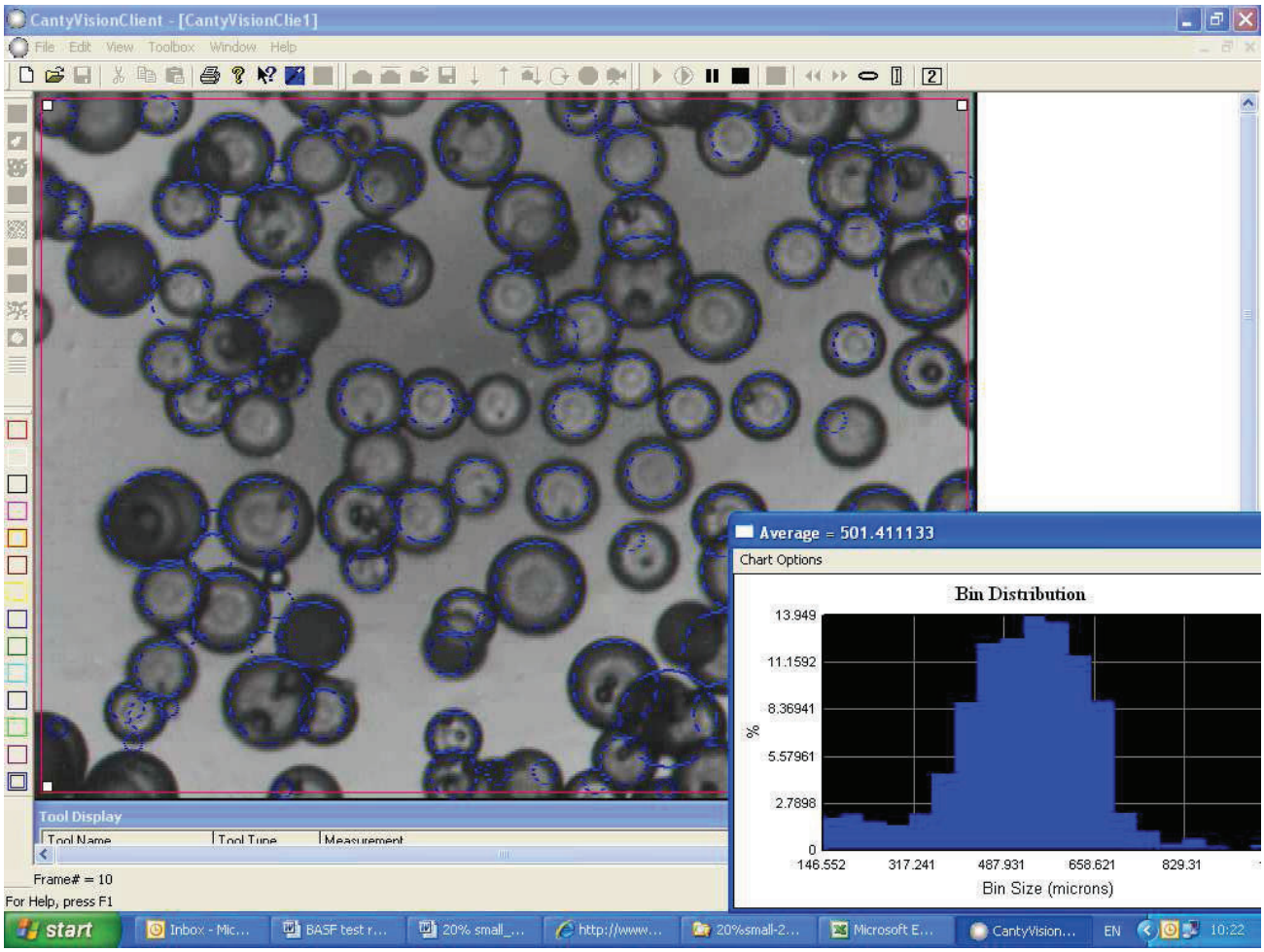

Figure 2 Sample 1 (20% bead concentration)

From the above image, it can be observed that from the bin distribution chart that the particle size range is from ~ 400microns – 700 microns which corresponds to the particle size range data from the customer.

TEST 2

20% bead concentration of Sample 1 and 2% bead concentration of Sample 2 suspended in water.

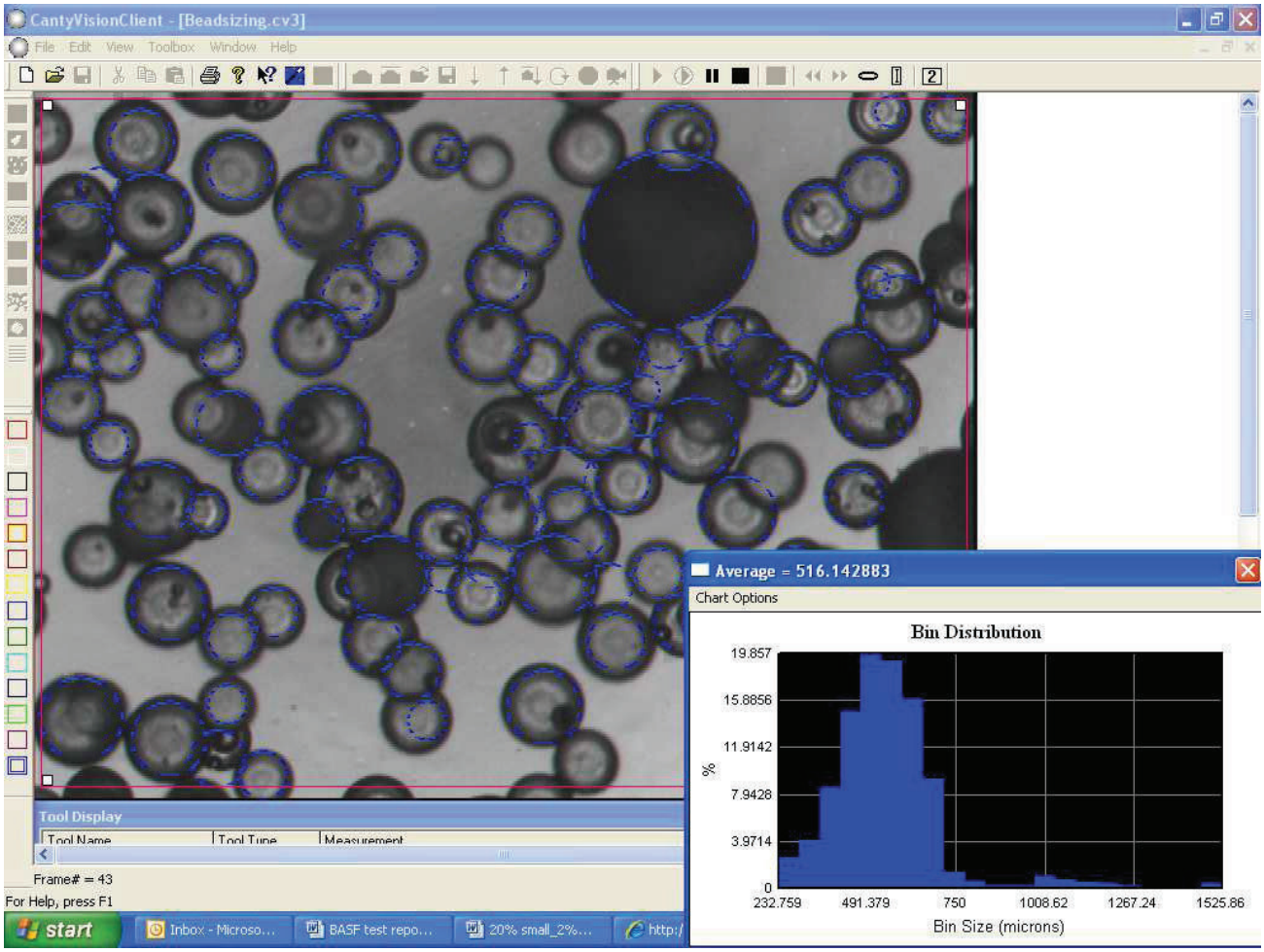

Figure 2 ESAM 287-1 (20% concentration) + ESAM 287-2 (2% concentration)

2% concentration of the larger bead size range was added to the product in the previous test. From the above bin distribution output chart, it can be observed that there is a distribution which represents the smaller bead sizes (20% concentration) in addition to detections in the larger size ranges which represent the 2% concentration of the larger beads. This can also be confirmed visually.

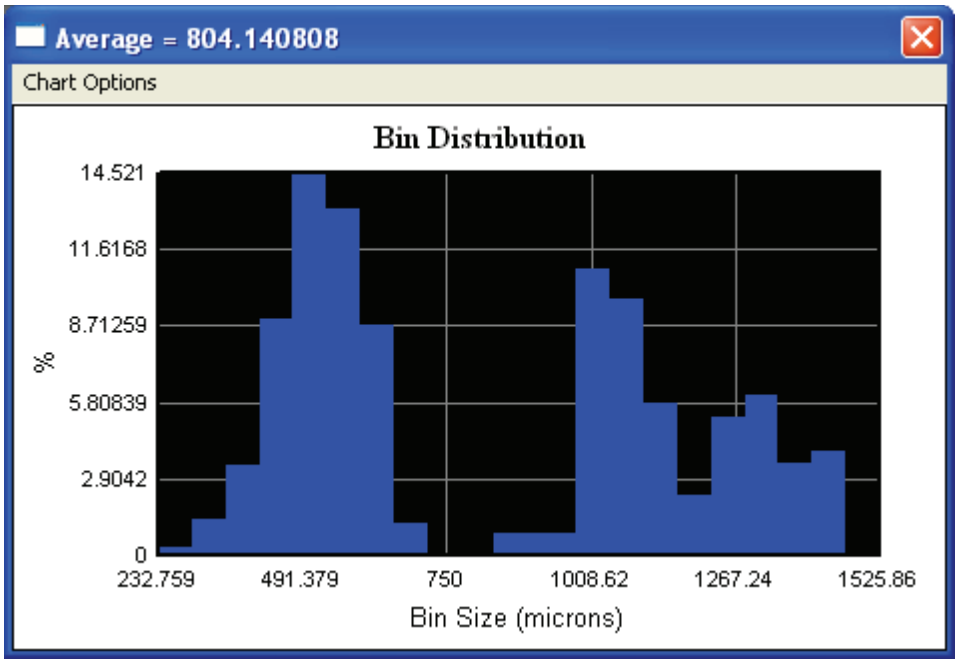

Figure 3 Bin Distribution Chart (ESAM287-1 (10% concentration) + ESAM287-2 (10% concentration)

Equal concentrations of the two samples were mixed together and analyzed. The above graph displays a bimodal distribution representing the two different size distributions of the samples.

TEST 3

The purpose of this test was to analyze a high bead concentration. 50% particle concentration of Sample 3 was suspended in water.

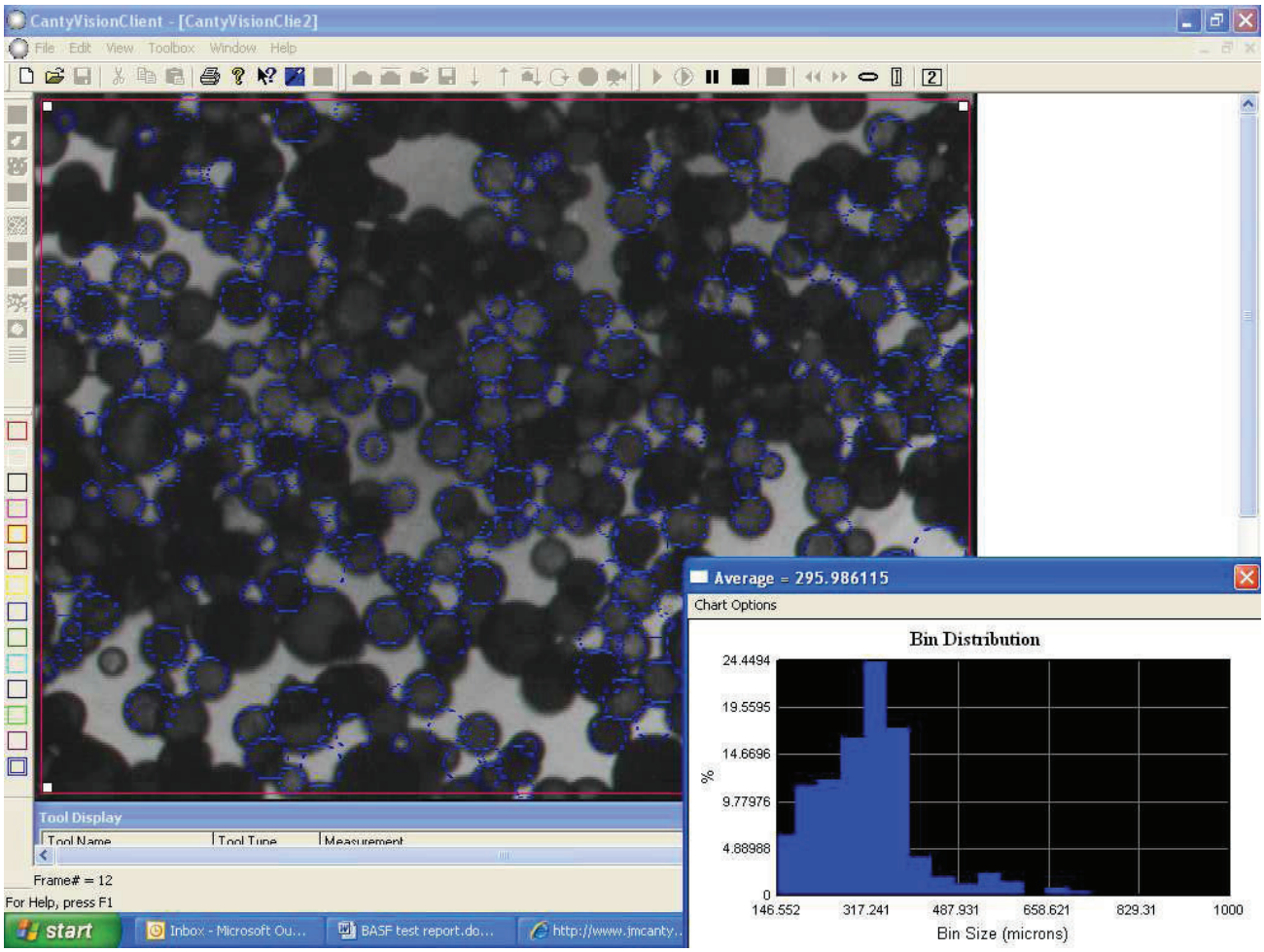

Figure 4 Sample 3 (50% bead concentration)