

Phenom Application Note

Date: **8/6/2007**
Title: **Micron Scale Beads**
Key Observable: **1 micrometer diameter polystyrene microspheres**
Education: **Graduate level research**

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Executive Summary

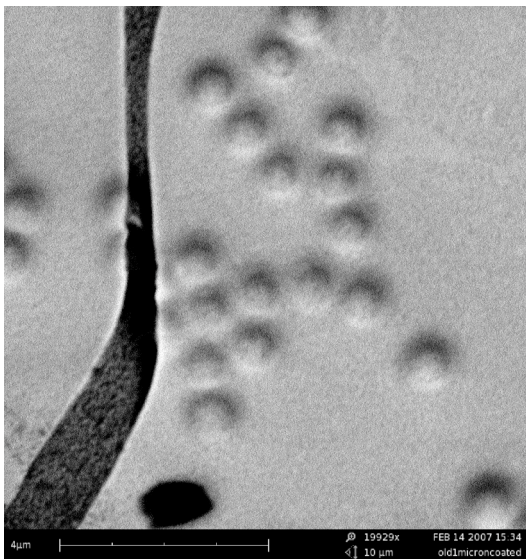
A sample of 1 micrometer diameter polystyrene microspheres was created and gold sputter-coated. The spheres are clearly visible in images taken. The spheres do not appear to be fused together, but there is some clumping that may be a result of the deposition process. There is also patchy areas of a light colored material dispersed in regions where there are microspheres, it is not clear what this is.

Sample Information

The sample is an evaporation of 1 micrometer diameter polystyrene spheres. This type of microspheres tends to clump together. The purpose of this sample was to evaluate the effectiveness of the experimental methods used in the author's lab to disassociate the spheres from each other.

Sample Preparation

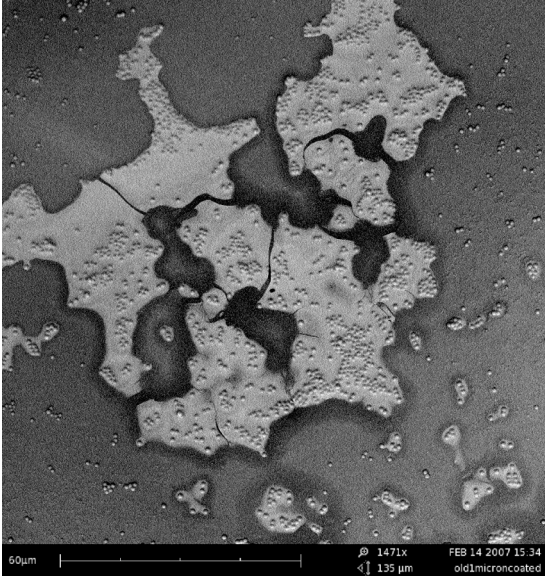
The sample was created by putting a drop of solution containing the microspheres onto a double-sided carbon sticky pad and letting the liquid evaporate and deposit the spheres onto the tab. The sample was then gold sputter-coated with a layer approximately 5 nanometers thick.



10 Micron FOV



47 Micron FOV



135 Micron FOV

Conclusions

From the images captured it appears that the majority of the beads are not bound to the others. This is an important quality in the authors use of the microspheres. There is some clumping of the spheres but this is most likely due to the evaporation method. Most do not appear to be close enough together to be bound together. It is uncertain what causes the patchiness around the microspheres. This may be a result of the impurities in the evaporating liquid or possibly due to the gold coating that has been applied.

Success and Recommendations

This sample ended up being somewhat ambiguous. It isn't clear what the light colored material between the microspheres is. Uneven sputter coating is a possibility. The images do seem to show that the microspheres aren't incredibly fused together.