Phenom Application Note

Date:	**8/6/2007**
Title:	**Staple**
Key Observable:	**cut ends of Staple**
Education:	**Materials, Physics**

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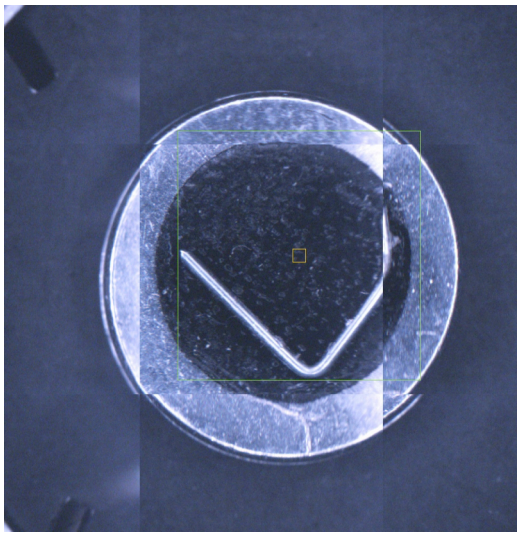
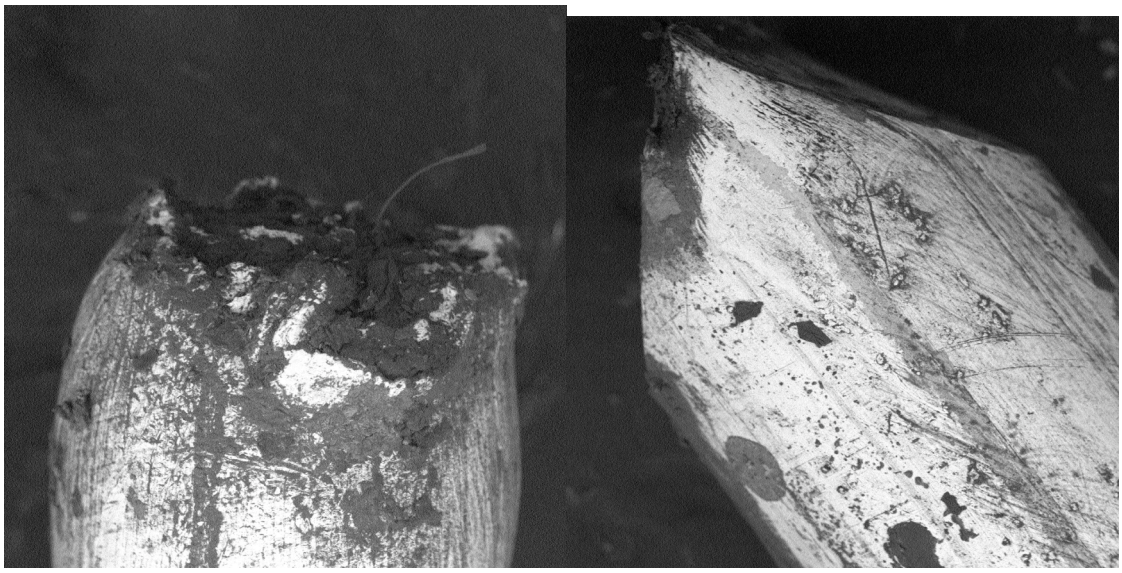
Executive Summary
A staple was cut at both ends in two different ways. The different effects of these two cuttings can be seen in images of the staple taken with the Phenom. Preparation was simple and no coating was needed. This sample allows students to see how two different processes create very different results, even when the results appear similar to the naked eye.

Sample Information
The sample was a standard staple. One end was cut cleanly using scissors and one end up was broken by repeatedly bending the staple until part of it broke off.

Sample Preparation
The staple was stuck to the stub using a double-sided carbon sticky pad. Due to the metallic nature of the staple, no coating was necessary to produce quality images.



Optical Camera View



Rough broken edge Clean cut edge

Conclusions

The idea for this sample was provided by a Physics teacher at a workshop for high school teachers to try out the Phenom. It was a very easy sample to make and image. It's interesting to see the difference between the two ends of the staple. In the image of the scissor cut end you can see the grain of the staple bend to follow the angle of the cut. The end that was broken by repeated bending is very rough and random in appearance.

Success and Recommendations

This sample was successful. It was very easy to prepare and observe the images. In this case students can see how different the ends were, even the to the naked eye the two ends seem very similar. The rough edge essentially melts apart from the bending friction and this can be seen in the image. The scissors both bend and slice through the metal. This is also visible in the image.