

TRICKS OF THE TRADE

Quick Coloring for SEM Images Method 1: Photoshop Hue/Saturation

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Bored of looking at the same gray image through a scanning electron microscope? There are several ways you can color those black and white SEM images to make your samples pop more.

This article will discuss one of two preferred methods; the other approach will appear in the next issue of *The Microscope*. I used Adobe Photoshop (PS) 6.0 for these enhancements, but the same steps apply to newer versions of the program. Photoshop Elements may also be used but with a slightly different series of steps.

Open the image in PS, and then select (from the top dropdown menu) Image > Adjust > Hue/Saturation (or use keyboard shortcut Ctrl+U). In the Hue/Saturation menu, check the Colorize box. Then, by moving the Hue and/or Saturation sliders, you can change the color of the entire black and white image.

If you want to have two or more colors in your image, you must use the Layers function. Open the

image and make sure the Layers window is visible (Window > Show Layers). Next, select Layer > New Adjustment Layer > Hue/Saturation. This will open the same Hue/Saturation window as in the earlier example, but in this case, there is freedom to modify this adjustment because it is a layer sitting on top of the original image. To add a second color, follow this example of a sodium chloride (NaCl) crystal image:

Figure 1A shows the original SEM image in typical black and white. To color the particle blue and the background red, start by making a Hue/Saturation layer and turning the entire image into the preferred blue color (Figure 1B).

Next, color the background red by making a second Hue/Saturation layer, which turns the entire image red, which will eventually be used only for the background (Figure 1C). Because the red-color layer is on top of the blue, the blue (for now) is no longer vis-

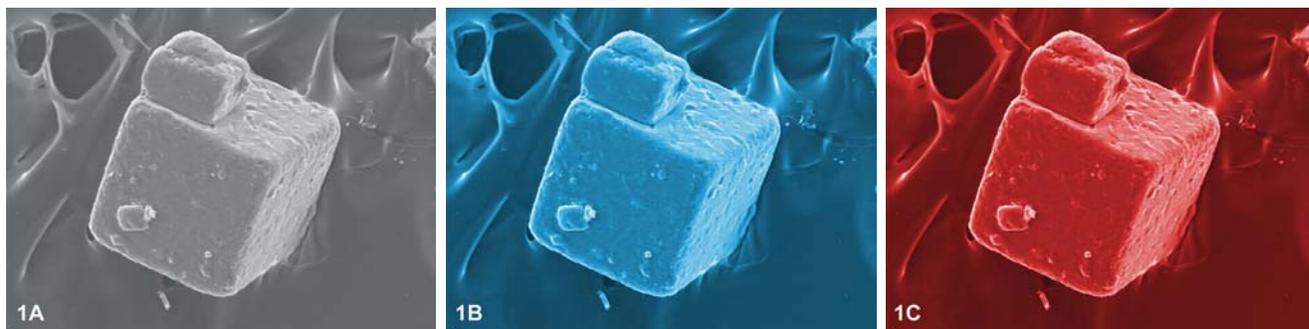


Figure 1. 1A: original black and white SEM image. 1B: image after the first Hue/Saturation layer is added to color the particle. 1C: image after the second Hue/Saturation layer is added to color the background.

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Figure 2. Layers palette in Photoshop showing the Layer Mask to the right of the Hue/Saturation icon.

ible. To uncover the blue on the particle, the red in that area must be erased. This is done by utilizing the white box that appears next to the Hue/Saturation layer known as the Layer Mask (Figure 2).

First, on the toolbar, check to make sure the colors are black and white (Figure 3). If they are not, click the toolbar icon shown in Figure 3 that defaults the colors to black and white. Next, make sure the foreground color is white. If needed, use the black and white switch icon to change the foreground color to white. Then, select the eraser tool from the toolbar (Figure 3).

Finally, start erasing the red to expose the blue color. The size of the eraser can easily be changed by pressing the] and [bracket keys for greater precision. If you mess up, simply switch the foreground color to black, which reverses the erasing. With careful, precise erasing you will end up with a final image that looks like the one in Figure 4.

There are different ways to color an SEM using this method, but this is the simplest approach to help you get started on the right track. I hope you enjoy doing it!

Next issue: Method 2: Photoshop Paintbrush

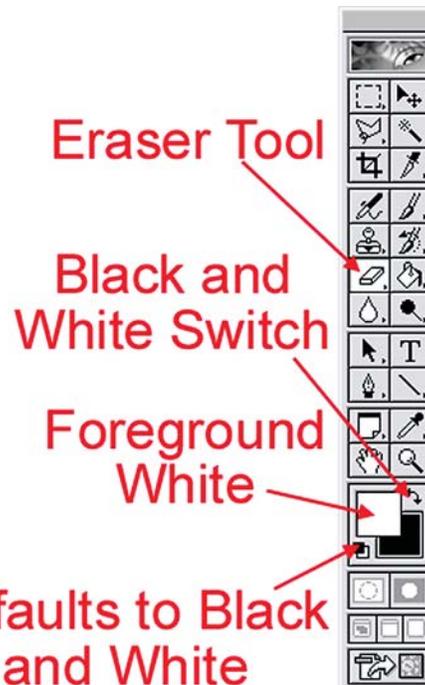


Figure 3. Toolbar showing eraser tool, foreground color selected as white, and the black and white switch icon.

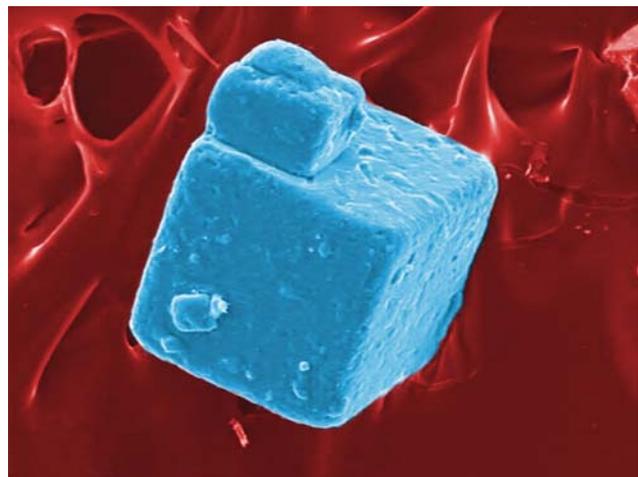


Figure 4. Final SEM image showing both colors.