
Importing Bayer 16 Images from Prosilica Cameras

Paul McGill

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Import the image file as unsigned 16-bit integers.

```
rawData = Import["/Users/mcgill/Desktop/fluoro_ext_pulse61_121222-051840.b16",  
  "UnsignedInteger16"];
```

Find out how many two-byte words are in the image file.

```
Length[rawData]
```

```
5 018 522
```

We can compare this to the number of pixels in the image.

```
2448 × 2050
```

```
5 018 400
```

There are an extra 122 words, which are header information that we can ignore for now.

```
rawData[[1 ;; 256]]
```

```
{45 064, 10 922, 9792, 153, 0, 0, 0, 0, 64 792, 32 767, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 9792, 153, 0, 0, 2448, 0, 2050, 0, 0,  
  0, 0, 0, 3, 0, 12, 0, 0, 0, 1, 0, 4371, 7532, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
  0, 80, 43, 79, 39, 75, 38, 91, 46, 62, 35, 61, 43, 77, 46, 41, 54, 59, 33, 79,  
  60, 104, 53, 77, 71, 89, 31, 66, 39, 75, 50, 95, 41, 59, 50, 80, 29, 39, 43,  
  68, 53, 37, 37, 88, 52, 77, 56, 84, 46, 68, 52, 82, 54, 80, 32, 68, 56, 86, 48,  
  71, 25, 88, 54, 57, 61, 73, 53, 70, 46, 97, 48, 66, 32, 88, 42, 89, 46, 79,  
  68, 55, 63, 35, 55, 59, 50, 53, 45, 95, 44, 52, 52, 80, 32, 95, 72, 89, 35,  
  80, 58, 48, 29, 66, 50, 80, 47, 59, 51, 80, 56, 53, 34, 89, 38, 79, 59, 79,  
  48, 89, 49, 106, 42, 55, 57, 111, 47, 64, 41, 80, 42, 71, 56, 107, 36, 79, 54}
```

```
rawData[[123]]
```

```
80
```

Drop the header information, and partition the data into 2050 rows of 2448 pixels.

```
rawArray = Partition[Drop[rawData, 122], 2448];
```

```
Length[rawArray]
```

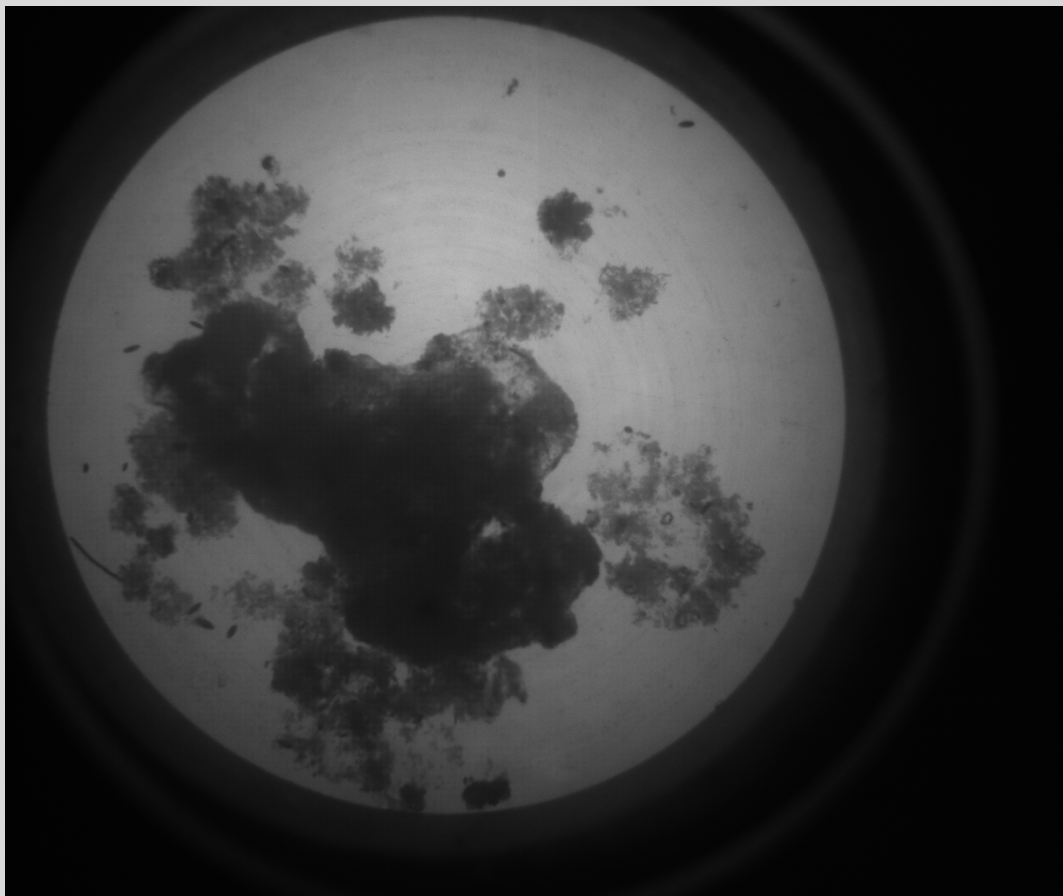
```
2050
```

```
Length[rawArray[[1]]]
```

```
2448
```

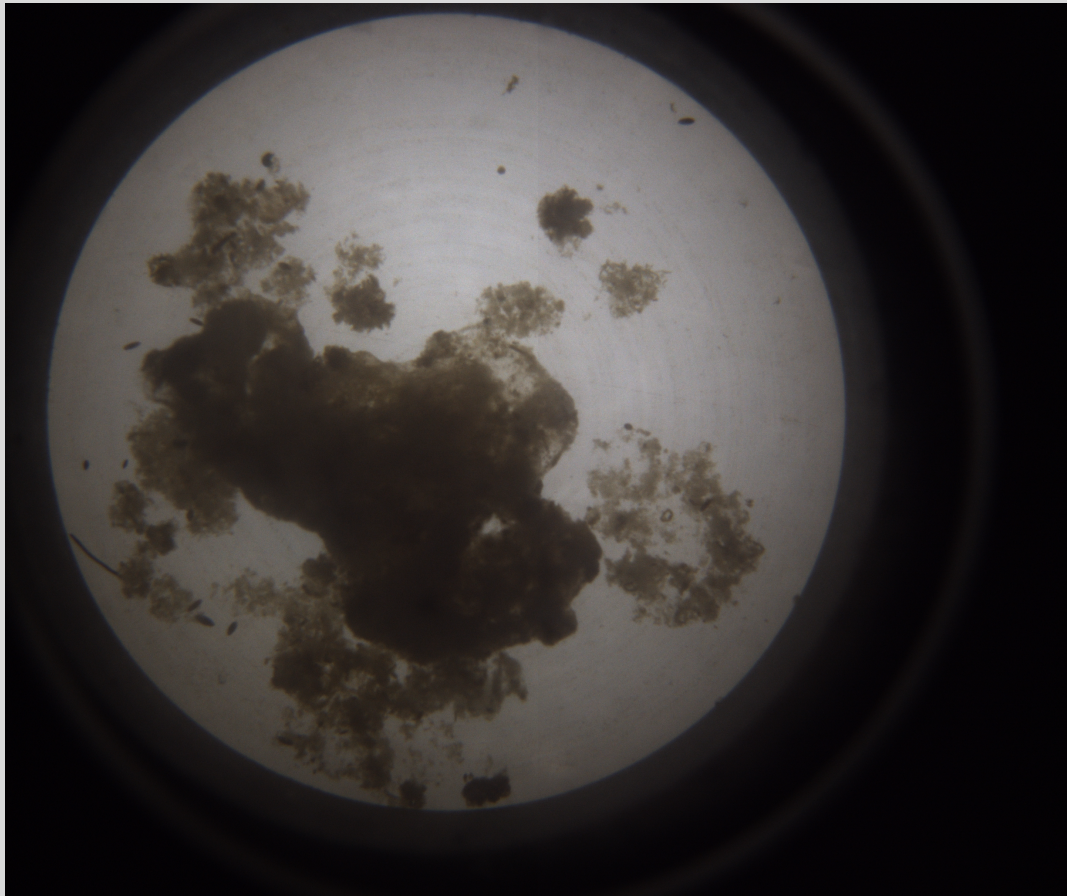
Convert the array values into an image. We know from the Prosilica documentation that pixel values are sampled with 12-bit resolution, so they range from 0 to 4095. Image pixel values in *Mathematica* must range from 0 (dark) to 1 (light), so divide each pixel value by 4096 to convert it to a floating-point value. The resulting image is monochrome because we haven't yet told *Mathematica* which pixels represent which colors.

```
rawImage = Image[rawArray / 4096]
```



Demosaic the image, specifying the order of colors within the camera's image sensor.

```
rgbImage = ImageDemosaic[rawImage, "RGGB"]
```



Combine all the operations above into a single function.

```
importb16[pathname_] := Module[{image},
  image = Image[
    Partition[
      Drop[
        Import[pathname, "UnsignedInteger16"],
        122],
      2448]
    / 4096];
  ImageDemosaic[image, "RGGB"]
]
```

Test the function.

```
importb16["/Users/mcgill/Desktop/fluoro_ext_pulse61_121222-051840.b16"]
```

