

**Dynamic range** is the ratio between the maximum and minimum measurable light intensities (in photography) or signal amplitudes (in audio) a system can capture, typically measured in stops or decibels (dB). It represents the ability to retain detail in both extreme highlights and deep shadows simultaneously without clipping or noise. <sup>1</sup>

A linear detector (or linear image sensor) in electron microscopy is a detector where the signal output is directly proportional to the incident electron flux.

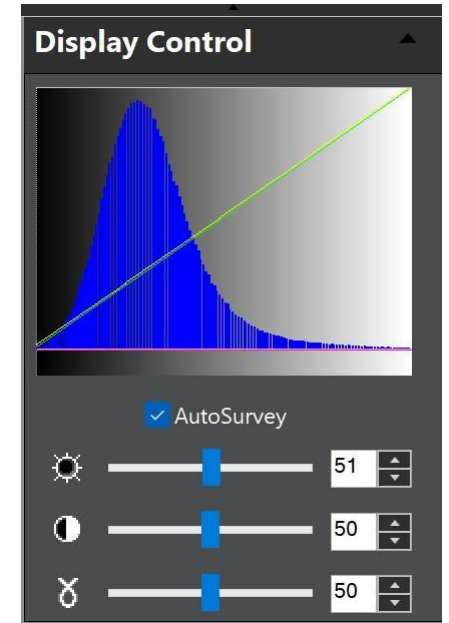
An annular dark field detector (ADF) is a linear detector made of an array of pixels that measure the number of electrons in each pixel to form an image. When a pixel is saturated information is lost because the pixel has reached its maximum charge capacity.

**It is important to adjust the dynamical range so that no information is lost.**

Contrast is the difference between bright and dark features in an image.

Gamma is a non-linear correction to adjust mid tones without affecting contrast. To enhance viewing of the image.

1. [https://en.wikipedia.org/wiki/Dynamic\\_range](https://en.wikipedia.org/wiki/Dynamic_range)



Histogram  
Obtained from Gatan Digital  
Micrograph



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2519466  
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THE UNIVERSITY  
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at CHAPEL HILL

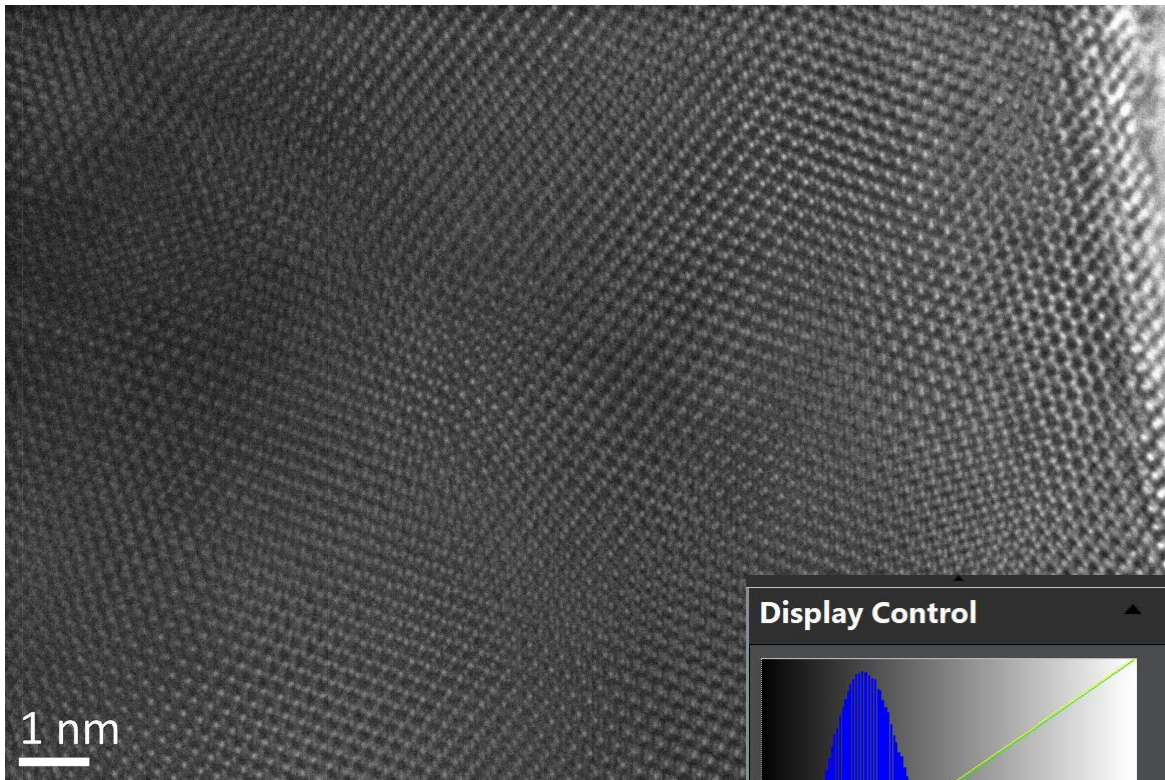


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Southern California

# Effect of brightness



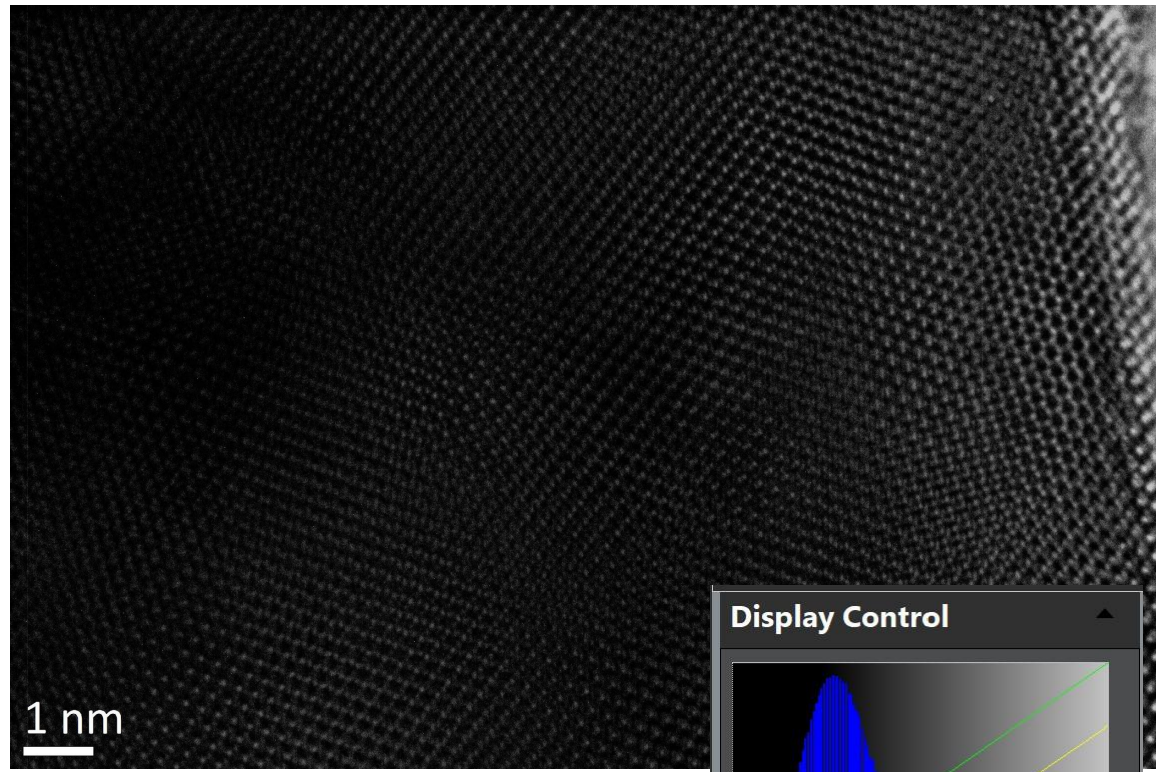
**Display Control**

AutoSurvey

51

50

50



**Display Control**

AutoSurvey

26

50

50