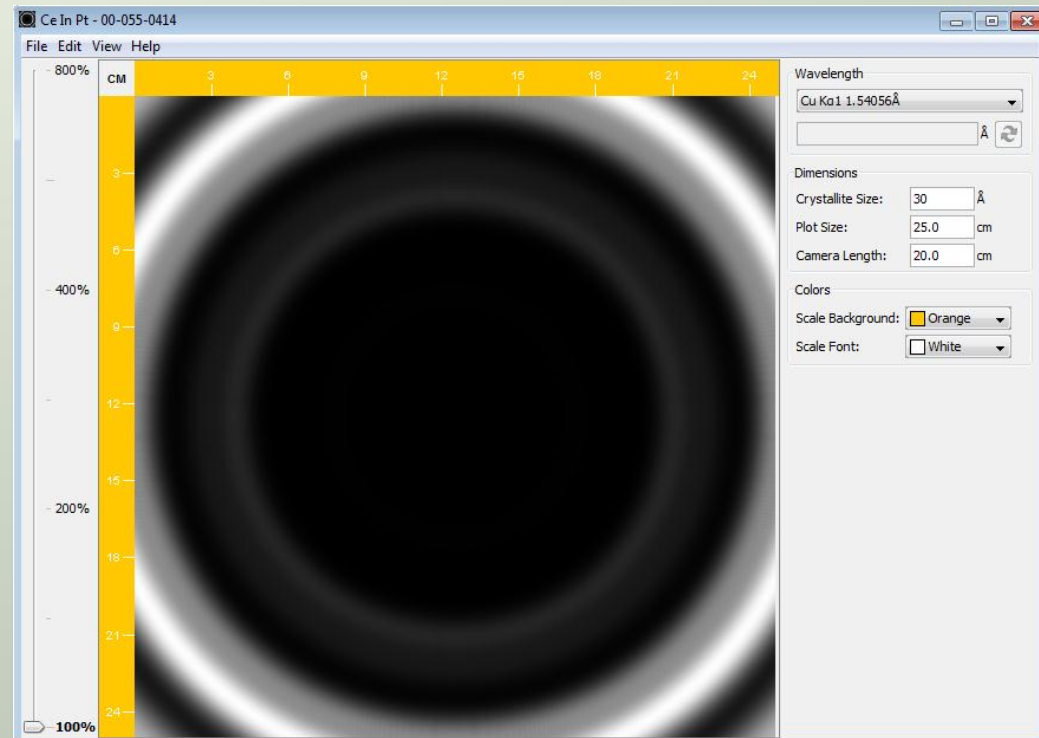


Use 2D Patterns

Use 2D Patterns

- A graphical 2D diffraction pattern, or *Ring Pattern*, can be produced for every entry in the ICDD PDF-4+ database.
- A Ring Pattern provides a 2-dimensional simulation of the X-ray pattern for a given phase as it would appear on a flat 2-dimensional detector such as:
 - Photographic film
 - Phosphor image plates
 - Solid state arrays



Ring Pattern for Cerium Indium Platinum

Use 2D Patterns

- Each ring corresponds to a peak (d-spacing and intensity), calculated using the **Crystallite Size** parameter specified in the 'Ring Pattern'.
- The higher the intensity, the brighter the ring.

DDX d-Spacings - 00-055-0414

Fixed Slit Intensity

2 θ	d(Å)	I	h	k	l	*
13.3162	6.643510	<1	0	1	0	
21.8352	4.067010	1	0	0	1	
23.1971	3.831230	18	1	1	0	
25.6580	3.469070	8	0	1	1	
26.8609	3.316380	5	0	2	0	
32.0475	2.790510	65	1	1	1	
34.8590	2.571610	100	0	2	1	
35.7852	2.507150	42	1	2	0	
40.7578	2.212010	58	0	3	0	
42.2983	2.134940	59	1	2	1	
44.4412	2.036840	21	0	0	2	
46.6872	1.943950	3	0	3	1	
47.4265	1.915360	26	2	2	0	
49.4905	1.840200	10	1	3	0	
50.7303	1.798100	5	1	1	2	
52.7432	1.734120	4	2	2	1	
54.6992	1.676640	17	1	3	1	
55.3438	1.658630	4	0	4	0	
58.3305	1.580610	23	1	2	2	
60.8011	1.522170	3	2	3	0	
61.8955	1.497850	26	0	3	2	
64.2801	1.447920	19	1	4	0	
65.4026	1.425760	48	2	3	1	
67.0217	1.395190	11	2	2	2	
68.7372	1.364500	26	1	4	1	

Dock

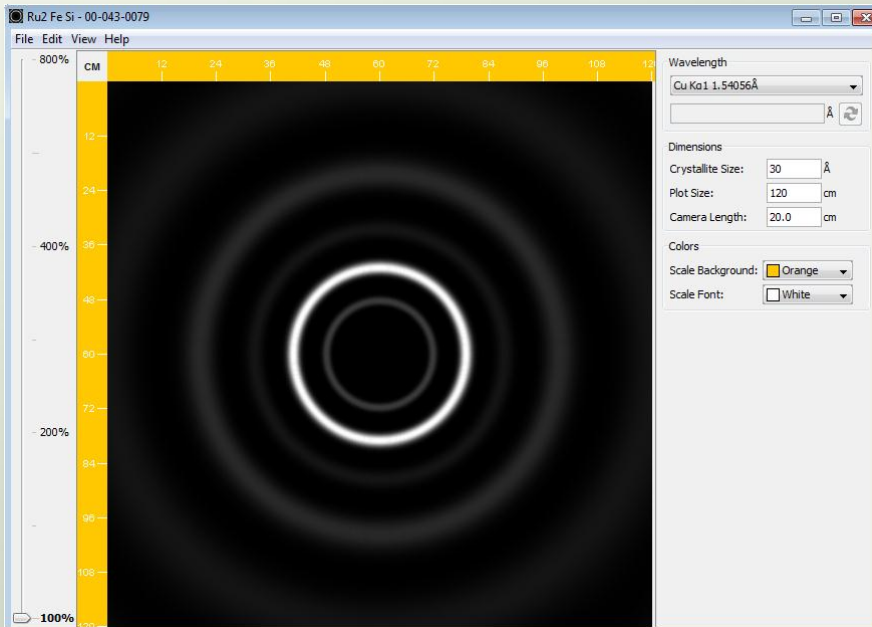


Ring Pattern for Cerium Indium Platinum

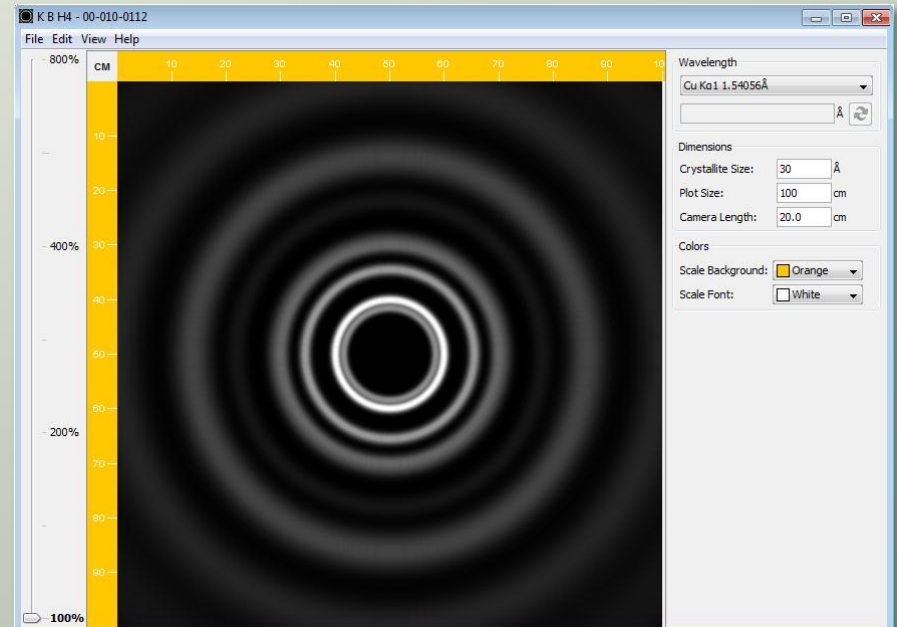
Peak list for Cerium Indium Platinum

Use 2D Patterns

- The simulation assumes:
 - No preferred orientation in the specimen
 - Uniaxial positioning of the detector (transmission geometry with incident beam centered)
 - Infinite number of randomly oriented crystallites



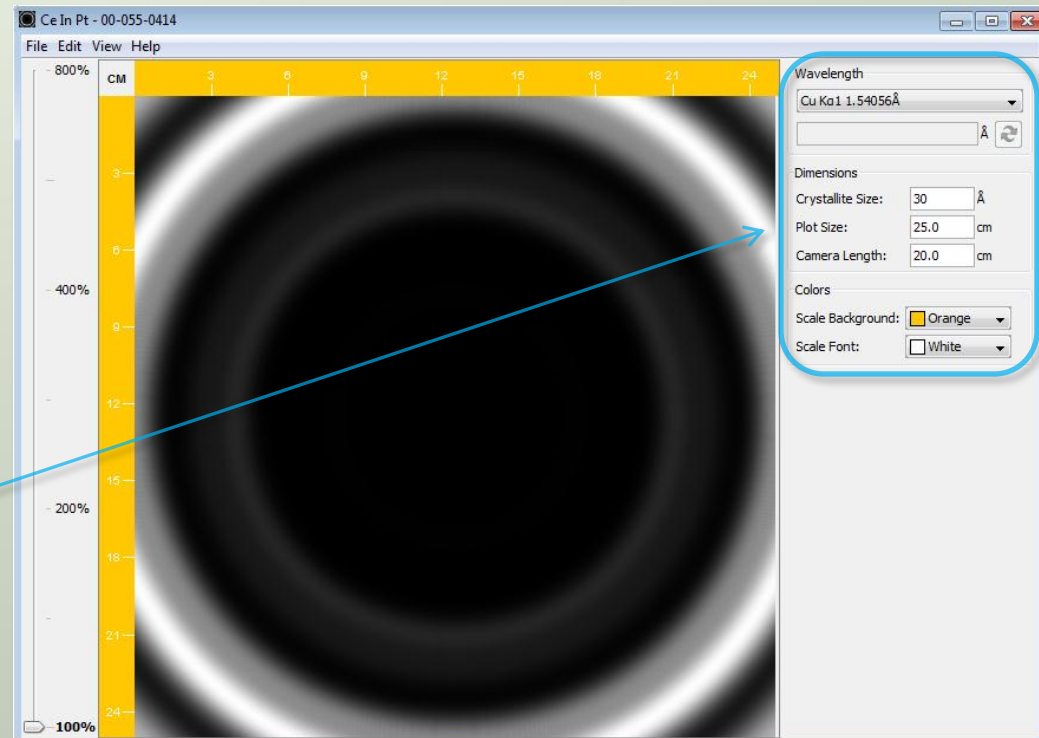
Ring Pattern for Iron Ruthenium Silicon



Ring Pattern for Potassium Boron Hydride

Ring Pattern Preferences

- There are various preferences used to control how the Ring Pattern is calculated and displayed.
 - Plot Size
 - Camera Length
 - Crystallite Size
 - Colors
 - Wavelength
- **New for 2011:** You can dynamically change the preferences on the form for that individual Ring Pattern.

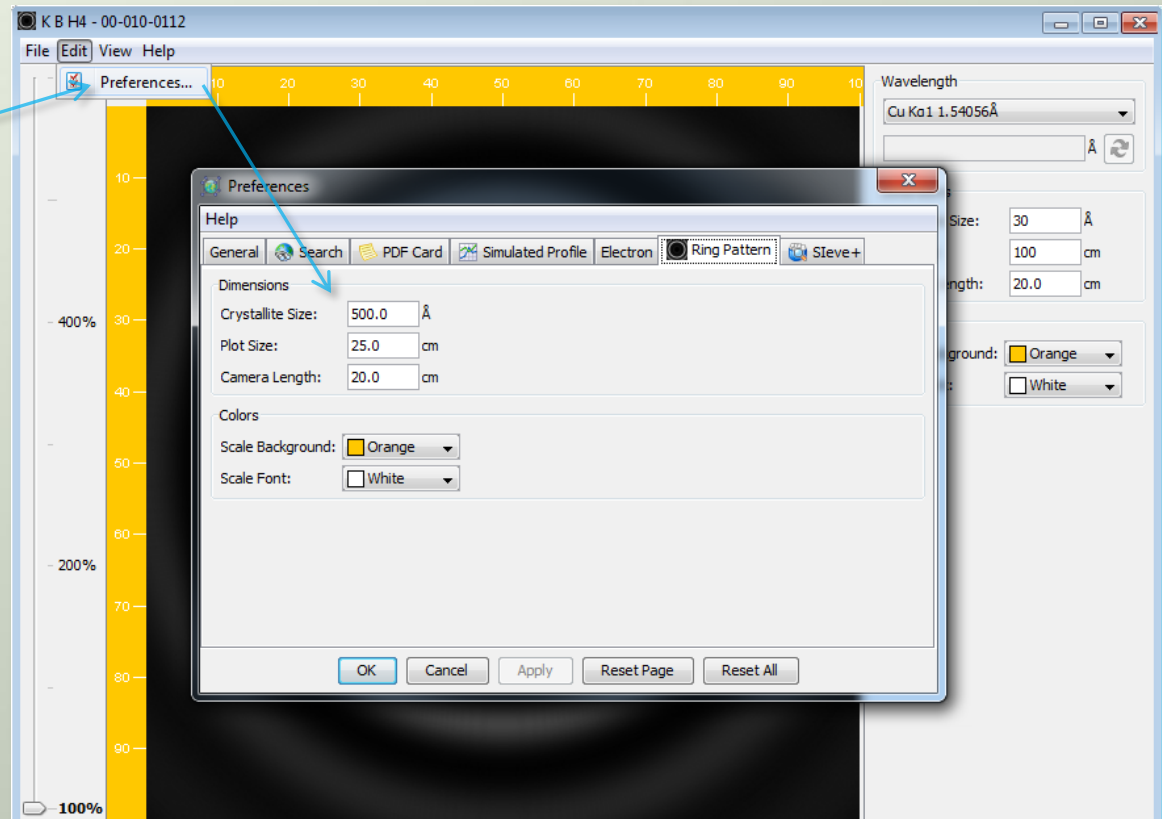


Ring Pattern for Cerium Indium Platinum

Ring Pattern Preferences

- Alternatively, you can change the preferences for all Ring Patterns by using the Ring Pattern Preferences form.

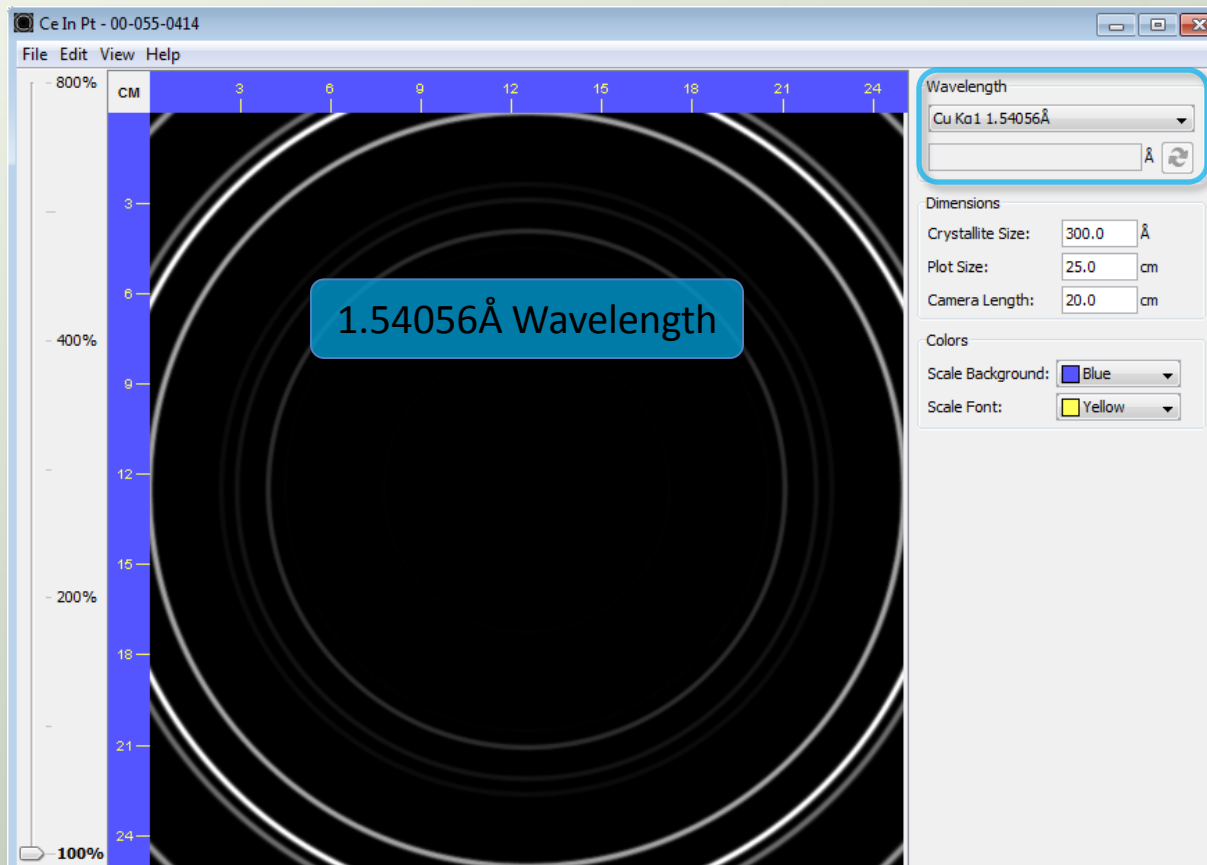
Click *Preferences* in the *Edit* menu



Ring Pattern Preferences

Ring Pattern Preferences

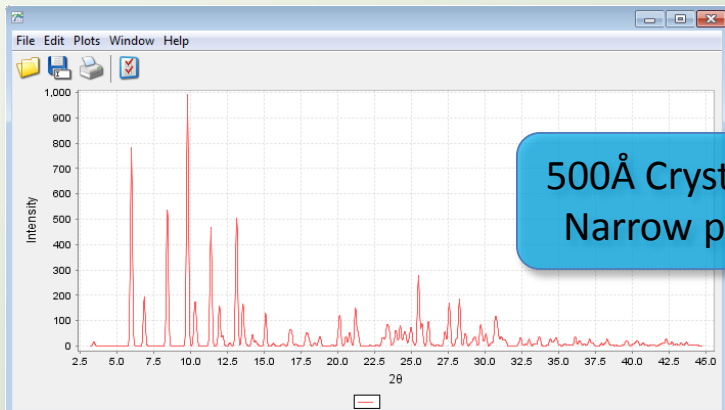
- The **Wavelength** of the Ring Pattern can be set using the combobox.
- To change the wavelength for all Ring Patterns, use the Simulated Profile Preferences.



Ring Pattern for Cerium Indium Platinum

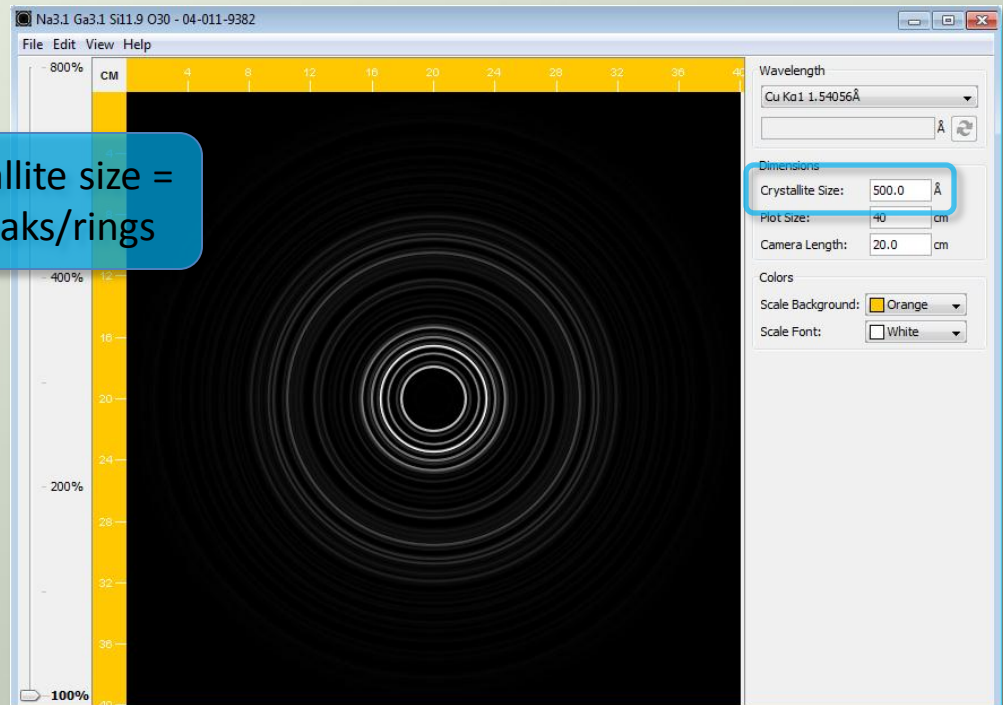
Ring Pattern Preferences

- The ***Crystallite Size*** parameter (in Å) affects the broadness of the rings.
- Narrow rings correspond to larger ***Crystallite Sizes***.



Diffraction Pattern for Sodium Gallium Silicon Oxide

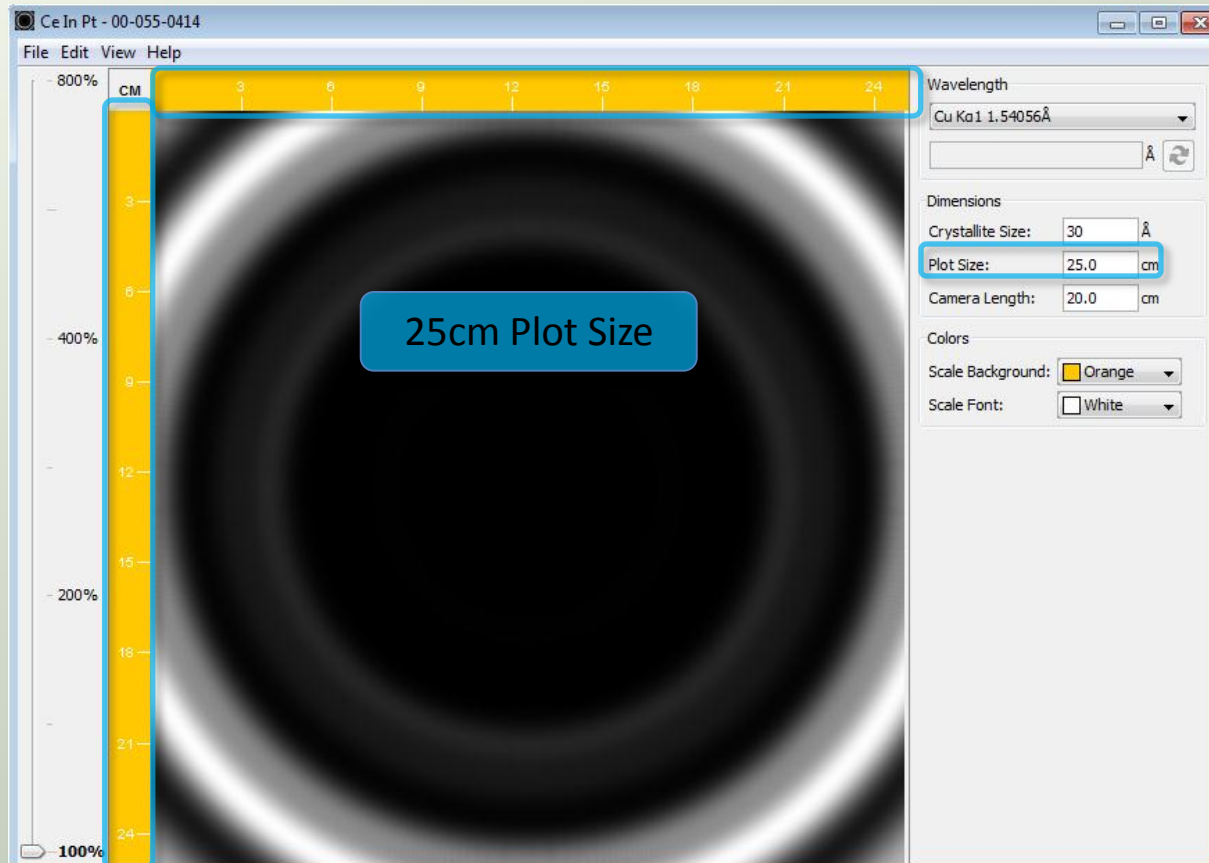
500Å Crystallite size =
Narrow peaks/rings



Ring Pattern for Sodium Gallium Silicon Oxide

Ring Pattern Preferences

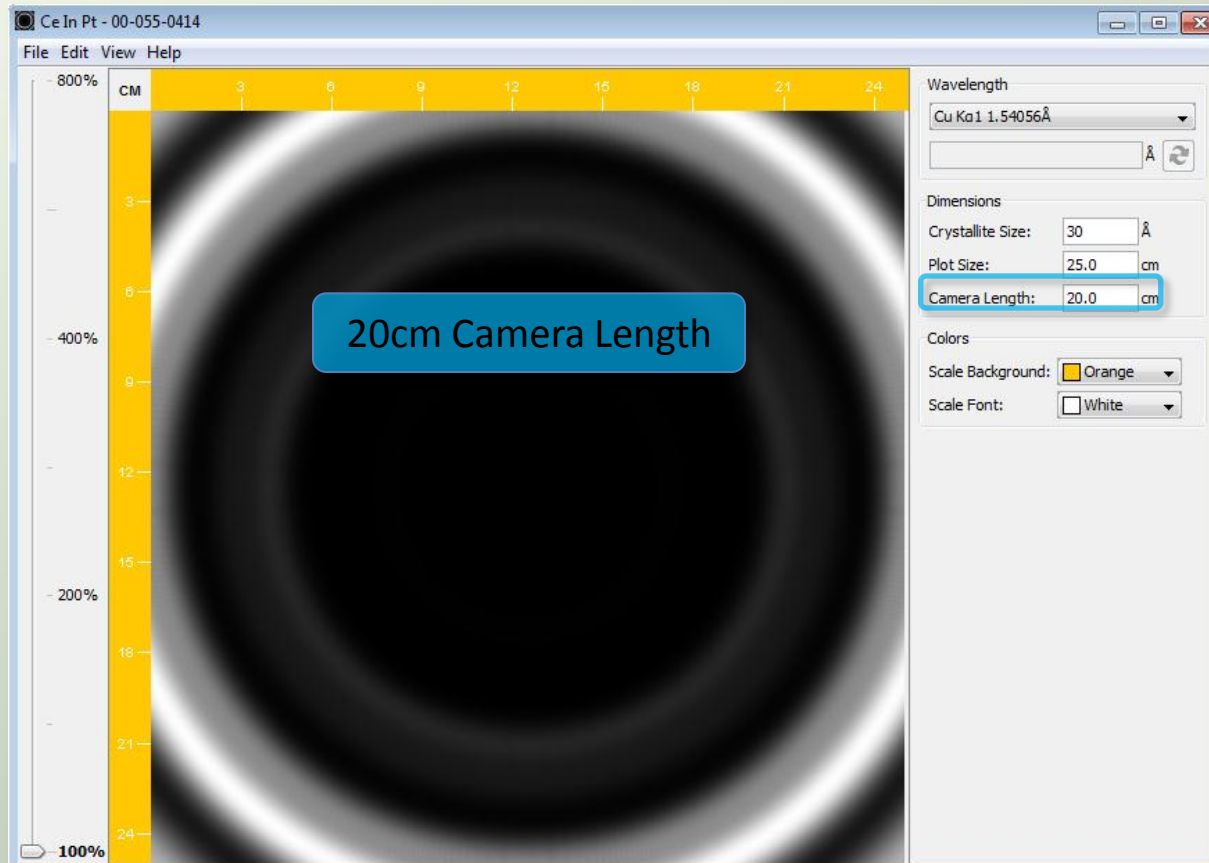
- The **Plot Size** controls the detector dimensions (width and height in cm).
- If the Ring Pattern is not visible on the form, try increasing the **Plot Size**.



Ring Pattern for Cerium Indium Platinum

Ring Pattern Preferences

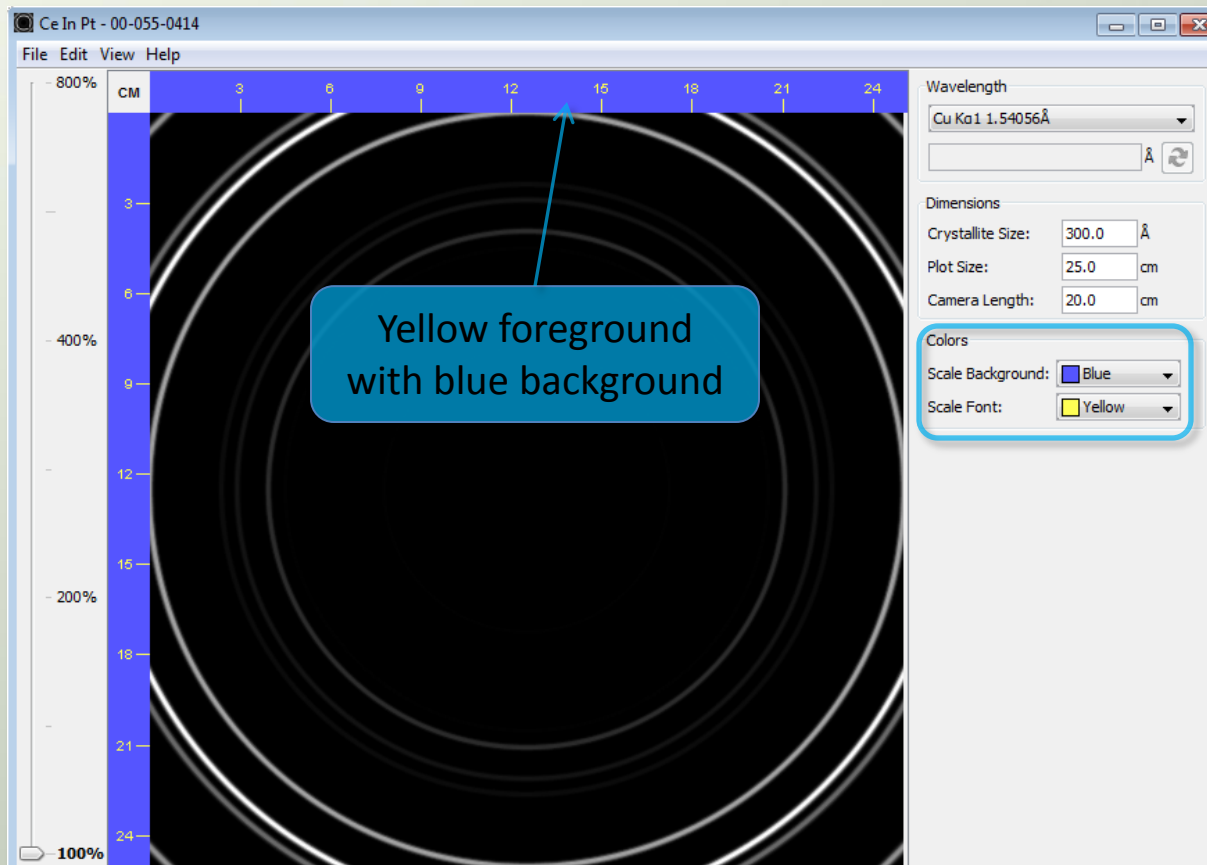
- The **Camera Length** controls the sample-to-detector distance (in cm).



Ring Pattern for Cerium Indium Platinum

Ring Pattern Preferences

- The **Scale Background** and **Scale Font** colors control the appearance of the Ring Pattern.



Ring Pattern for Cerium Indium Platinum

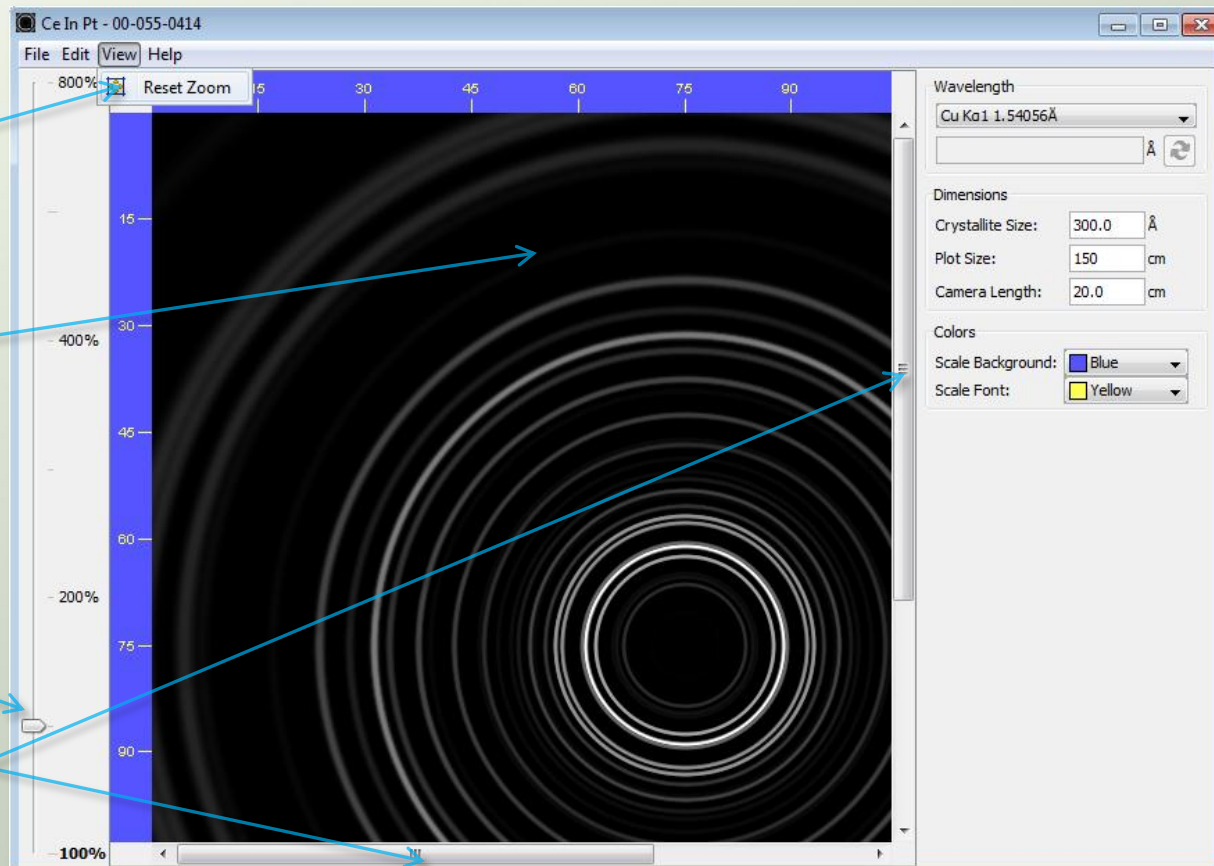
Ring Pattern Manipulation

Click to reset zoom

Double-click anywhere to reset zoom

Drag the slider to zoom

Drag the scrollbars to pan



Ring Pattern for Cerium Indium Platinum



Thank you for viewing our tutorial.
Additional tutorials are available at the ICDD website.

www.icdd.com

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