CLAIMS

1. A method comprising:

applying, using a controller, a segment mask on a die of a wafer thereby forming a segment on the die;

calculating, using the controller, a mean intensity of the segment in red, green, and blue colors using a bright field mode and in red, green, and blue colors using a dark field mode;

comparing, using the controller, defocus value against the mean intensities;

determining, using the controller, a color combination that optimizes defocus sensitivity;

determining, using the controller, sensitivity to defocus for each pixel in the segment;

applying, using the controller, a threshold to the sensitivity for each pixel; and

generating, using the controller, a second segment mask on the die based on pixels that are above the threshold to the sensitivity.

2. The method of claim 1, wherein the wafer is a training wafer with focus modulations.

3. The method of claim 1, wherein the wafer includes a plurality of the dies, and wherein the generating and the calculating are repeated for each of the dies on the wafer.

4. The method of claim 1, wherein the segment mask is configured to cover part of the die.

5. The method of claim 1, wherein the comparing includes generating a scatter plot of defocus value versus the mean intensity.

6. The method of claim 1, further comprising adjusting the threshold using the controller.

7. The method of claim 1, wherein an average intensity of all pixels within a die is used when applying the threshold to the sensitivity for each pixel.

8. A non-transitory computer readable medium storing a program configured to instruct a processor to:

apply a segment mask on a die thereby forming a segment on the die;

calculate a mean intensity of the segment with data including red, green, and blue colors using a bright field mode and with data including red, green, and blue colors using a dark field mode;

compare defocus value against the mean intensities;

determine a color combination that optimizes defocus sensitivity;

determine sensitivity to defocus for each pixel in the segment;

apply a threshold to the sensitivity for each pixel; and

generate a second segment mask on the die based on pixels that are above the threshold to the sensitivity.

9. The non-transitory computer readable medium of claim 8, wherein a wafer includes a plurality of the dies, and wherein the generating and the calculating are repeated for each of the dies on the wafer.

10. The non-transitory computer readable medium of claim 8, wherein the segment mask is configured to cover part of the die.

11. The non-transitory computer readable medium of claim 8, wherein comparing the defocus value includes generating a scatter plot of the defocus value versus the mean intensity.

12. The non-transitory computer readable medium of claim 8, wherein the program is further configured to adjust the threshold.

13. The non-transitory computer readable medium of claim 8, wherein an average intensity of all pixels within a die is used when applying the threshold to the sensitivity for each pixel.

14. A system comprising:

a chuck configured to hold a wafer;

a measurement system configured to measure a surface of the wafer, wherein the measurement system provides an image of the wafer using a bright field mode and a dark field mode; and

a controller in electronic communication with the measurement system, wherein the controller includes a processor, an electronic data storage unit in electronic communication with the processor, and a communication port in electronic communication with the processor, and wherein the controller is configured to:

apply a segment mask on a die of the wafer thereby forming a segment on the die;

calculate a mean intensity of the segment with data including red, green, and blue colors using the bright field mode and with data including red, green, and blue colors using the dark field mode;

compare defocus value against the mean intensities;

determine a color combination that optimizes defocus sensitivity;

determine sensitivity to defocus for each pixel in the segment; apply a threshold to the sensitivity for each pixel; and

generate a second segment mask on the die based on pixels that are above the threshold to the sensitivity.

15. The system of claim 14, wherein the wafer includes a plurality of dies.

16. The system of claim 14, wherein the segment mask applied by the controller is configured to cover part of the die.

17. The system of claim 14, wherein comparing the defocus value includes generating a scatter plot of the defocus value versus the mean intensity.

18. The system of claim 14, wherein the controller is further configured to adjust the threshold.

19. The system of claim 14, wherein an average intensity of all pixels within a die is used when applying the threshold to the sensitivity for each pixel.