Method of Color Inspection by Using Monochrome Imaging With Multiple Wavelengths of Light

TECHNICAL FIELD

[0001] The invention includes a system and method for imaging, and more specifically, to a system and method of producing a high-resolution image across a wide field of view (FOV) utilizing multiple images obtained from a monochrome camera and with multiple wavelengths of light.

BACKGROUND

[0002] Various applications require high-resolution imaging across a wide field of view (FOV). In high-precision manufacturing, objects are inspected to ensure the absence of flaws or irregularities. High-resolution imaging can be essential as the inspection involves examining small but critical features on each component. For example, Automated Optical Inspection (AOI) systems are often used to analyze and evaluate electrical circuits, including flat panel displays, integrated circuits, chip carriers and printed circuit boards.

[0003] Conventional imaging methods use a color camera and white light to photograph an object. This process is limited by the hardware used to process the image. A large space-bandwidth product requires using higher magnification and larger lenses. The image sensors are also made larger with higher pixel counts. In the alternative, image sensors with a smaller pixel pitch can be used while maintaining a large active area. However, larger components can be expensive and make the system bulky and cumbersome. Moreover, such systems can be slow and impractical for industrial uses.

[0004] A need, therefore, exists for a system and method to overcome the shortcomings of conventional high-resolution imaging systems. Specifically, there is a need for an improved system and method for obtaining high-resolution images of the surfaces of objects for inspection. The system should provide high resolution