Claims

1. An inspection system comprising:

an ~~illuminator~~ illumination setup configured for supplying incident thin line illumination to an inspection position on a surface of an article under inspection;

a plurality of optical elements comprising a first reflector assembly configured for capturing dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection, and the first reflector assembly being further configured for directing the captured dispersed thin line illumination along a plurality of optical paths to provide a plurality of views of the surface of the article under inspection; and

~~an~~ a single image capture device comprising a 3D camera configured to receive as a single exposure the captured dispersed thin line illumination directed along a plurality of optical paths that provides the plurality of views of the surface of the article under inspection ~~as a single exposure~~.

2. The system of claim 1, wherein the thin line illumination incident on the surface of the article under inspection is directed thereto by a second reflector assembly, the second reflector assembly comprising at least one reflector.

3. The system of claim 1, wherein the first reflector assembly comprises at least one of a beam splitter, mirror, a prism and a reflective surface.

4. The system of claim 1, wherein the first reflector assembly comprises a first reflecting structure and a second reflecting structure arranged for capturing dispersed thin line illumination reflected from the surface of the article under inspection and directing the captured dispersed thin line illumination along a first optical path and a second optical path respectively.

5. The system of claim 1, wherein the plurality of optical elements further includes at least one objective lens configured for collimating the captured dispersed thin line illumination directed along the plurality of optical paths.

6. The system of claim 1, wherein the plurality of optical elements further includes at least one tube lens configured for focusing the captured dispersed thin line illumination directed along the plurality of optical paths onto an image plane of the single image capture device.

7. The system of claim 6, wherein the tube lens facilitates introduction of additional optical components into the system.

~~8. The system of claim 1, wherein the illuminator comprises a thin line illuminator.~~

~~9. The system of claim 8, wherein the thin line illuminator comprises a laser.~~

~~10~~8. The system of claim 1, wherein the plurality of views of the surface of the article under inspection provides or corresponds to a 3D profile of the surface of the article under inspection at the inspection position.

~~11~~9. The system of claim 1, wherein the single image capture device is configured for converting the single exposure of the plurality of views of the surface of the article under inspection to image signals, and where the system further comprises a processing unit configured for receiving and processing the image signals.

~~12~~10. The system of claim ~~11~~9, wherein processing the image signals facilitates ~~a 3D~~an inspection process performed upon the surface of the article under inspection, wherein the inspection process includes at least one of 3D height measuring, coplanarity measuring, and detecting and classifying a defect.

~~13~~11. The system of claim 1, wherein the single image capture device is configured for capturing as a single exposure the plurality of views of the surface of the article under inspection while the article under inspection is in motion.

~~14. The system of claim 1, wherein the image capture device comprises a 3D profile camera.~~

~~15~~12. A method of inspection comprising:

supplying incident thin line illumination to an inspection position on a surface of an article under inspection by an ~~illuminator~~illumination setup;

transmitting dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection along a plurality of optical paths to provide a plurality of views of the surface of the article under inspection, the transmitting facilitated by a plurality of optical elements; and

~~capturing~~ receiving as a single exposure the dispersed thin line illumination directed along the plurality of optical paths that provides the plurality of views of the surface of the article under inspection by ~~an~~ a single image capture device comprising a 3D profile camera.

~~16~~13. The method of inspection as in claim ~~15~~12, wherein transmitting dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection along a plurality of optical paths to provide a plurality of views of the surface of the article under inspection comprises:

capturing dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection by the plurality of optical elements; and

directing the captured dispersed thin line illumination along the plurality of optical paths to provide the plurality of views of the surface of the article under inspection by the plurality of optical elements.

~~17~~14. The method of inspection as in claim ~~15~~12, wherein the plurality of optical elements comprises a first reflector assembly and wherein the first reflector assembly comprises at least one of a beam splitter, mirror, a prism and a reflective surface.

~~18~~15. The method of inspection as in claim ~~15~~12, wherein transmitting the dispersed thin line illumination reflected in multiple directions from the surface of the article under

inspection along the plurality of optical paths comprises transmitting the dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection along a first optical path and a second optical path.

~~19~~16. The method of inspection as in claim ~~18~~15, wherein

the plurality of optical elements comprises an objective lens; and

transmitting the dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection along the first optical path and the second optical path comprises collimating the dispersed thin line illumination reflected along the first optical path and the second optical path by the objective lens.

~~20~~17. The method of inspection as in claim ~~18~~15, wherein

the plurality of optical elements comprises a tube lens; and

transmitting the dispersed thin line illumination reflected in multiple directions from the surface of the article under inspection along the first optical path and the second optical path comprises focusing the dispersed thin line illumination reflected along the first optical path and the second optical path by the tube lens.

~~21. The method of inspection as in claim 15, wherein supplying incident illumination to the inspection position on the surface of the article under inspection by the illuminator comprises supplying incident illumination to the inspection position on the surface of the article under inspection by a thin line illuminator.~~

~~22. The method of inspection as in claim 15, wherein supplying incident illumination to the inspection position on the surface of the article under inspection by a thin line illuminator comprises supplying incident illumination to the inspection position on the surface of the article under inspection by a laser.~~

~~23. The method of inspection as in claim 15, wherein capturing as a single exposure the plurality of views of the surface of the article under inspection by the image capture~~

~~device comprises capturing as a single exposure a 3D profile of the surface of the article under inspection by the image capture device.~~

~~24~~18. The method of inspection as in claim ~~15~~12, further comprising:

converting the single exposure of the plurality of views to image signals by the single image capture device.

~~25~~19. The method of inspection as in claim ~~24~~18, further comprising:

receiving and processing the image signals by a processing unit.

~~26~~20. The method of inspection as in claim ~~15~~12, wherein ~~capturing~~ the plurality of the views of the surface of the article under inspection is captured as a single exposure by the single image capture device ~~is performed~~ when the article under inspection is in motion.