CLAIMS

What is claimed is:

1. An apparatus comprising:

a first photon emitter array comprising a first plurality of photon emitters configured to emit coherent and polarized photons oriented at a first polarization orientation onto a location of a surface of an article;

a second photon emitter array comprising a second plurality of photon emitters configured to emit coherent and polarized photons oriented at a second polarization orientation onto the surface of the article, wherein the second plurality of photon emitters emit onto the same location of the surface as the first plurality of photon emitters;

a photon detector configured to receive photons scattered from features on the surface of the article; and

a mapping means for mapping the features on the surface of the article based on information received from the photon detector.

2. The apparatus of Claim 1, wherein:

one photon emitter of the first plurality of photon emitters is configured to emit photons of a first wavelength and another photon emitter of the first plurality of photon emitters is configured to emit photons of a second wavelength; and

the first and second wavelengths are different.

3. The apparatus of Claim 1, wherein the first plurality of photon emitters is configured to selectively change the emitted photons from one polarization orientation to another polarization orientation.

4. The apparatus of Claim 1, wherein at least one of the first plurality of photon emitters is a solid state diode.

5. The apparatus of Claim 1, wherein one photon emitter of the first plurality of photon emitters is arranged in parallel with respect to another photon emitter of the first plurality of photon emitters.

6. The apparatus of Claim 1, wherein:

one photon emitter of the first plurality of photon emitters and one photon emitter of the second plurality of photon emitters is configured to emit photons of a first wavelength and another photon emitter of the first plurality of photon emitters and one photo emitter of the second plurality of photon emitters is configured to emit photons of a second wavelength; and

the first and second wavelengths are different.

7. The apparatus of Claim 1, wherein at least one of the photon emitters and at least one of the second plurality of photon emitters is a solid state diode.

8. The apparatus of Claim 1, wherein one photon emitter of the first plurality of photon emitters is arranged in parallel with respect to another photon emitter of the first plurality of photon emitters, and wherein one photon emitter of the second plurality of photon emitters is arranged in parallel with respect to another photon emitter of the second plurality of photon emitters.

9. The apparatus of Claim 1 further comprising a telecentric lens coupled to the photon detector.

10 The apparatus of Claim 1, wherein the photon detector comprises a complementary metal-oxide semiconductor ("CMOS"), a scientific complementary metal-oxide semiconductor ("sCMOS"), or a charge-coupled device ("CCD").