

Claims

1. A system for optical three-dimensional topography measurement of a surface of an object, the system comprising:
 - a source of patterned illumination;
 - an objective including an optical axis perpendicular to a macroscopic extension of the surface of the object, arranged to direct the patterned illumination to the surface of the object;
 - a detector arranged and configured for recording a plurality of images of the surface of the object through the objective; and
 - a computer connected to the detector that is configured to determine height information for a position on the surface of the object based on differences in light intensity of the plurality of images, wherein the light intensity changes along a direction that includes an oblique angle with the optical axis of the objective.
2. The system of claim 1, wherein the source of patterned illumination includes a light source and a pattern mask.
3. The system of claim 2, wherein the pattern mask has a checkerboard pattern or a pinhole array.
4. The system of claim 2, wherein the pattern mask is a grating.
5. The system of claim 4, wherein the grating is an amplitude grating or a phase grating.
6. The system of claim 4, wherein the grating is a line grating or a sinusoidal grating or a cross-line grating.
7. The system of claim 4, wherein the grating is a blazed grating.
8. The system of claim 1, wherein a beam splitter is arranged in such a way that both an illumination path between the source of patterned illumination and the objective, and an imaging path between the objective and the detector pass through the beam splitter.
9. The system of claim 8, wherein the objective is positioned to correct diffraction caused by the beam splitter.

10. The system of claim 2, wherein the pattern mask and the detector are in conjugate planes.