CLAIMS

1. A system comprising:

a light source configured to emit an excitation light;

at least one excitation element attached to a surface of a structure, the at least one excitation element comprising a photostrictive material and configured to receive the excitation light for generating an oscillating strain, wherein the oscillating strain generates an acoustic wave in the structure; and

a detector configured to detect the acoustic wave.

2. The system as claimed in claim 1, wherein the excitation light is modulated based on a light intensity.

3. The system as claimed in claim 1, wherein the excitation light is modulated based on an optical polarization.

4. The system as claimed in any one of the preceding claims, wherein the photostrictive material comprises a ferroelectric material.

5. The system as claimed in any one of the preceding claims, wherein the at least one excitation element comprises a resonance frequency based on at least one of a shape, a pattern and a dimension of the at least one excitation element.

6. The system as claimed in claim 5, wherein the excitation light is modulated at a modulation frequency based on the resonance frequency of the at least one excitation element.

7. The system as claimed in any one of claims 1 to 5, comprising a plurality of excitation elements, wherein the plurality of excitation elements are attached to the surface of the structure based on a pre-defined pattern.

8. The system as claimed in claim 7, wherein the pre-defined pattern comprises a periodicity, and wherein the excitation light is modulated at a modulation frequency based on the periodicity of the pre-defined pattern.

9. The system as claimed in claim 7 or 8, wherein the pre-defined pattern comprises an orientation, and wherein a direction of propagation of the acoustic wave is defined by the orientation of the pre-defined pattern.

10. The system as claimed in any one of the preceding claims, wherein the at least one excitation element comprises a cantilever.

11. The system as claimed in any one of the preceding claims, wherein the acoustic wave is an ultrasonic wave with frequency above 20 kHz.

12. A method for detecting an anomaly in a structure, the method comprising:

attaching at least one excitation element to a surface of the structure, the at least one excitation element comprising a photostrictive material;

emitting, by a light source, an excitation light onto the at least one excitation element such that an oscillating strain is generated in the at least one excitation element, wherein the oscillating strain generates an acoustic wave in the structure; and

detecting, by a detector, the acoustic wave for detecting an anomaly in the structure.

13. The method as claimed in claim 12, further comprising modulating the excitation light based on a light intensity.

14. The method as claimed in claim 12, further comprising modulating the excitation light based on an optical polarization.

15. The method as claimed in any one of claims 12 to 14, wherein the photostrictive material comprises a ferroelectric material.

16. The method as claimed in any one of claims 12 to 15, wherein the at least one excitation element comprises a resonance frequency based on at least one of a shape, a pattern and a dimension of the at least one excitation element.

17. The method as claimed in claim 16, further comprising modulating the excitation light at a modulation frequency based on the resonance frequency of the at least one excitation element.

18. The method as claimed in any one of claims 12 to 17, comprising attaching a plurality of excitation elements to the surface of the structure based on a pre-defined pattern, wherein

the pre-defined pattern comprises a periodicity, and wherein the method further comprises modulating the excitation light at a modulation frequency based on the periodicity of pre-defined pattern.

19. The method as claimed in claim 18, wherein the pre-defined pattern comprises an orientation, and wherein detecting the acoustic wave comprises detecting along a direction of propagation of the acoustic wave defined by the orientation of the pre-defined pattern.

20. The method as claimed in any one of claims 12 to 19, wherein the detector comprises a non-contact sensor.