WHAT IS CLAIMED IS:

1. A method for monitoring a structural health of an object, said method comprising:

identifying a state of fluorescence of at least one particle associated with the object; and

determining a structural health parameter associated with the object based on the identified state of fluorescence of the at least one particle.

2. A method in accordance with Claim 1 further comprising stimulating the at least one particle to emit a particle signal, the state of fluorescence associated with the particle signal within the object.

3. A method in accordance with Claim 1 further comprising detecting a particle signal emitted by the at least one particle, the state of fluorescence associated with the particle signal.

4. A method in accordance with Claim 1, wherein at least a first particle is configured to emit a first particle signal and at least a second particle is configured to emit a second particle signal, the state of fluorescence associated with at least one of the first particle signal and the second particle signal, wherein said method further comprises stimulating at least one of the first particle positioned at a first depth relative to the object and the second particle positioned at a second depth relative to the object. and wherein said method further comprises detecting at least one of the first particle signal emitted by the first particle positioned at a first depth relative to the object and the second particle signal emitted by the second particle positioned at a second depth relative to the object.

5. A method in accordance with Claim 1, wherein determining a structural health parameter further comprises comparing the structural health parameter to a predefined threshold.

6. A computing device for use in determining a structural health of an object, said computing device programmed to:

identify a state of fluorescence of at least one particle associated with the object; and

determine a structural health parameter associated with the object based on the identified state of fluorescence of the at least one particle.

7. A computing device in accordance with Claim 6 communicatively coupled to a stimulator, wherein said computing device is further programmed to direct the stimulator to stimulate the at least one particle to emit a particle signal, the state of fluorescence associated with the particle signal within the object.

8. A computing device in accordance with Claim 6 communicatively coupled to a sensor, said computing device further programmed to receive a sensor signal representative of a particle signal emitted by the at least one particle, the state of fluorescence associated with the particle signal.

9. A computing device in accordance with Claim 6 communicatively coupled to a stimulator, wherein at least a first particle is configured to emit a first particle signal and at least a second particle is configured to emit a second particle signal, the state of fluorescence associated with at least one of the first particle signal and the second particle signal, and wherein said computing device is further programmed to direct the stimulator to stimulate at least one of the first particle positioned at a first depth relative to the object and the second particle positioned at a second depth relative to the object, and wherein said computing device is further programmed to receive a sensor signal representative of at least one of the first particle signal emitted by the first particle positioned at a first depth relative to the object and the second particle signal emitted by the second particle positioned at a second depth relative to the object.

10. A computing device in accordance with Claim 6 further programmed to compare the structural health parameter to a predefined threshold.

11. A system for use in determining a structural health of an object, said system comprising:

at least one particle associated with the object; and

a computing device programmed to:

identify a state of fluorescence of said at least one particle associated with the object; and

determine a structural health parameter associated with the object based on the identified state of fluorescence of said at least one particle.

12. A system in accordance with Claim 11 further comprising a stimulator communicatively coupled to said computing device, wherein said computing device is further programmed to direct said stimulator to stimulate said at least one particle to emit a particle signal, the state of fluorescence associated with the particle signal., and wherein said computing device further programmed to receive a sensor signal representative of a particle signal emitted by said at least one particle, the state of fluorescence associated with the particle signal.

13. A system in accordance with Claim 11, wherein at least a first particle is configured to emit a first particle signal and at least a second particle is configured to emit a second particle signal, the state of fluorescence associated with at least one of the first particle signal and the second particle signal, wherein said first particle is positioned at a first depth relative to the object, and said second particle is positioned at a second depth relative to the object

14. A system in accordance with Claim 13 further comprising a stimulator communicatively coupled to said computing device, wherein said computing device is further programmed to direct said stimulator to stimulate at least one of said first particle and said second particle, and wherein said computing device is further programmed to receive a sensor signal representative of at least one of the first particle signal emitted by said first particle and the second particle signal emitted by said second particle.

15. A system in accordance with Claim 11, wherein said computing device is further programmed to compare the structural health parameter to a predefined threshold.

CLAIMS

1. A method for monitoring a structural health of an object, said method comprising:

directing a signal towards the object that includes a first particle originally at a first depth within the object and a second particle originally at a second deeper depth within the object, wherein at least one of the first particle and the second particle may be exposed at a surface of the object, wherein the signal is configured to stimulate at least one of the first particle and the second particle to a state of fluorescence, wherein the first particle is configured to emit a first particle signal and the second particle is configured to emit a second particle signal that is different than the first particle signal;

receiving at least one of the first particle signal and the second particle signal as a result of stimulating the at least one of the first particle and the second particle, wherein the stimulation is based on which of the first and second particles are exposed at the surface of the object;

identifying the state of fluorescence of the at least one of the first particle signal and the second particle signal associated with the object based on the received at least one of the first particle signal and the second particle signal;

determining a first structural health parameter associated with the object based on whether only the first particle signal is received and identified; and

determining a second structural health parameter associated with the object based on whether the second particle signal is received and identified.

2. A method in accordance with Claim 1, further comprising comparing at least one of the first and second structural health parameters to a predefined threshold.

3. The method of either one of Claims 1 and 2 wherein said object is a tyre.

4. A computing device for use in determining a structural health of an object, said computing device programmed to:

direct a signal towards the object that includes a first particle originally at a first depth within the object and a second particle originally at a second deeper depth within the object, wherein at least one of the first particle and the second particle may be exposed at a surface of the object, wherein the signal is configured to stimulate at least one of the first particle and the second particle to a state of fluorescence, wherein the first particle is configured to emit a first particle signal and the second particle is configured to emit a second particle signal that is

different than the first particle signal;

receive at least one of the first particle signal and the second particle signal as a result of stimulating the at least one of the first particle and the second particle, wherein the stimulation is based on which of the first and second particles are exposed at the surface of the object;

identify the state of fluorescence of the at least one of the first particle signal and the second particle signal associated with the object based on the received at least one of the first particle signal and the second particle signal;

determine a first structural health parameter associated with the object based on whether only the first particle signal is received and identified; and

determine a second structural health parameter associated with the object based on whether the second particle signal is received and identified.

5. A computing device in accordance with Claim 4 communicatively coupled to a sensor, said computing device further programmed to receive a sensor signal representative of the one of the first particle signal and the second particle signal emitted by the first and second particles.

6. A computing device in accordance with Claim 4 further programmed to compare at least one of the first and second structural health parameters to a predefined threshold.

7. A system for use in determining a structural health of an object, said system comprising:

a first particle originally at a first depth within the object and a second particle originally at a second deeper depth within the object, wherein the first and second particles may be exposed at a surface of the object;

a stimulator configured to direct a signal towards the object such that at least one of the first particle and the second particle is stimulated to a state of fluorescence;

a sensor configured to detect a particle signal emitted by at least one of the first particle and the second particle; and

a computing device programmed to:

instruct the stimulator to direct the signal towards the object, wherein the first particle is configured to emit a first particle signal and the second particle is configured to emit a second particle signal that is different than the first particle signal;

receive, from the sensor, at least one of the first particle signal and the second particle signal as a result of stimulating the at least one of the first particle and the second particle, wherein the stimulation is based on which of the first and second particles are exposed at the

surface of the object;

identify the state of fluorescence of the at least one of the first particle signal and the second particle signal associated with the object based on the received at least one of the first particle signal and the second particle signal;

determine a first structural health parameter associated with the object based on whether only the first particle signal is received and identified; and

determine a second structural health parameter associated with the object based on whether the second particle signal is received and identified.

8. A system in accordance with Claim 4, wherein said computing device is further programmed to compare at least one of the first and second structural health parameters to a predefined threshold.