WHAT IS CLAIMED IS:

1. A gel comprising a phase-change material and a gelling agent, wherein the phase-change material is at least one n-alkane, the gel being formed by (a) mixing the phase-change material and the gelling agent at a first temperature at which the phase-change material is in a liquid state and which is below the flash point of the phase-change material and at which the mixture is not a viscoelastic liquid, wherein the first temperature is in the range of about 15°C to about 30°C, whereby a non-homogenous mixture is produced; (b) then, heating the non-homogeneous mixture to a second temperature that is below the flash point of the phase-change material and at which a viscoelastic liquid is formed; and (c) then, cooling the viscoelastic liquid to room temperature.

2. The gel as claimed in claim 1 wherein the ~~phase-change material is~~ at least one n-alkane is selected from n-alkanes ranging in size from n-tetradecane to n-octadecane~~organic phase-change material~~.

~~3. The gel as claimed in claim 2 wherein the at least one organic phase-change material is at least one compound selected from the group consisting of n-alkanes, fatty acid esters, fatty alcohols, and fatty acids.~~

4~~3~~. The gel as claimed in claim ~~3~~ 2 wherein the at least one n-alkane ~~organic phase-change material~~ is selected from the group consisting of n-tetradecane, n-hexadecane, n-octadecane, and mixtures thereof.

5~~4~~. The gel as claimed in claim ~~4~~ 3 wherein the at least one n-alkane ~~organic phase-change material~~ is n-tetradecane and/or n-hexadecane.

6~~5~~. The gel as claimed in claim 1 wherein the gelling agent is at least one saturated olefin rubber.

~~7~~6. The gel as claimed in claim ~~6~~ 5 wherein the gelling agent is at least one hydrogenated styrenic block copolymer.

~~8~~7. The gel as claimed in claim ~~7~~ 6 wherein the gelling agent is at least one styrene-ethylene-butylene-styrene (SEBS) tri-block copolymer.

~~9~~8. The gel as claimed in claim ~~8~~ 7 wherein the gelling agent is at least one high molecular weight styrene-ethylene-butylene-styrene tri-block copolymer with a styrene:rubber ratio in the range of ~~about~~ 30:70 to 33:67 % by weight.

~~10~~9. The gel as claimed in claim ~~1~~ 2 wherein ~~the phase-change material is n-hexadecane and/or n-tetradecane and~~ the gelling agent is selected from the group consisting of at least one ~~a high molecular weight~~ styrene-ethylene-butylene-styrene tri-block copolymer, at least one styrene-ethylene-propylene-styrene (SEPS) tri-block copolymer, and mixtures thereof ~~with a styrene:rubber ratio in the range of about 30:70 to 33:67 % by weight~~.

~~11~~10. The gel as claimed in claim 1 wherein the gelling agent constitutes up to ~~about~~ 10%, by weight, of the gel.

~~12~~11. The gel as claimed in claim 1 wherein the gelling agent constitutes up to ~~about~~ 10%, by weight, of the gel, with the phase-change material and, optionally, a dye constituting the remainder of the gel.

~~13~~12. The gel as claimed in claim ~~7~~ 6 wherein the gelling agent is at least one styrene-ethylene-propylene-styrene (SEPS) tri-block copolymer.

~~14~~13. The gel as claimed in claim ~~13~~ 12 wherein the gelling agent is at least one high molecular weight styrene-ethylene-propylene-styrene tri-block copolymer with a styrene:rubber ratio in the range of about 20:80 % by weight.

~~15~~14. The gel as claimed in claim 1 ~~wherein the phase-change material is a liquid at a temperature in the range of about 15ºC to about 30ºC, wherein the first temperature is in the range of about 15ºC to about 30ºC, and~~ wherein the second temperature is in the range of about 40ºC to about 80ºC.

~~16~~15. The gel as claimed in claim ~~15~~ 14 wherein the second temperature is in the range of about 45ºC to about 65ºC.

~~17~~16. The gel as claimed in claim 1 wherein the phase-change material is a liquid at a temperature in the range of about 19ºC to about 25ºC, wherein the first temperature is in the range of about 19ºC to about 25ºC, and wherein the second temperature is in the range of about 40ºC to about 80ºC.

~~18~~17. The gel as claimed in claim ~~17~~ 16 wherein the second temperature is in the range of about 45ºC to about 65ºC.

~~19~~18. A method of preparing a gel, the method comprising the steps of:

(a) providing a phase-change material, wherein the phase-change material comprises at least one n-alkane;

(b) providing a gelling agent;

(c) mixing the phase-change material and the gelling agent at a first temperature at which the phase-change material is in a liquid state and which is below the flash point of the phase-change material and at which the mixture is not a viscoelastic liquid, whereby a non-homogenous mixture is produced;

(d) then, heating the non-homogeneous mixture to a second temperature that is below the flash point of the phase-change material and at which a viscoelastic liquid is formed; and

(e) then, cooling the viscoelastic liquid to room temperature.

~~20~~19. The method as claimed in claim ~~19~~ 18 wherein the phase-change material is selected from the group consisting of n-tetradecane, n-hexadecane, n-octadecane, and mixtures thereof.

~~21~~20. The method as claimed in claim ~~20~~ 19 wherein the gelling agent is at least one styrene-ethylene-butylene-styrene (SEBS) tri-block copolymer and/or at least one styrene-ethylene-propylene-styrene (SEPS) tri-block copolymer.

~~22~~21. The method as claimed in claim ~~21~~ 20 wherein the phase-change material is a liquid at a temperature in the range of about 15ºC to about 30ºC, wherein the first temperature is in the range of about 15ºC to about 30ºC, and wherein the second temperature is in the range of about 40ºC to about 80ºC.

~~23~~22. The method as claimed in claim ~~21~~ 20 wherein the phase-change material is a liquid at a temperature in the range of about 19ºC to about 25ºC, wherein the first temperature is in the range of about 19ºC to about 25ºC, and wherein the second temperature is in the range of about 40ºC to about 80ºC.

~~24~~23. The method as claimed in claim ~~19~~ 18 further comprising, after the mixing step and before the heating step, the step of allowing the non-homogenous mixture to rest for a period of time ranging from about 30 minutes to about 72 hours.

~~25~~24. The method as claimed in claim ~~19~~ 18 wherein said heating step comprises a ramp phase in which the temperature is ramped from the first temperature to the second temperature and a constant phase in which the temperature is maintained at the second temperature.

~~26~~25. The method as claimed in claim ~~25~~ 24 wherein the ramp phase ranges from a rate of about 0.025ºC/minute to about 2.5ºC/minute.

~~27~~26. The method as claimed in claim ~~26~~ 25 wherein the ramp phase ranges from a rate of about 0.15ºC/minute to about 0.30ºC/minute.

~~28~~27. The method as claimed in claim ~~25~~ 24 wherein the constant phase ranges from about 0.5 hours to about 20 hours.

~~29~~28. The method as claimed in claim ~~28~~ 27 wherein the constant phase ranges from about 6 hours to about 16 hours.

~~30~~29. The method as claimed in claim ~~19~~ 18 wherein said cooling step comprises cooling at a rate of about 0.025ºC/minute to about 2.5ºC/minute.

~~31~~30. The method as claimed in claim ~~30~~ 29 wherein said cooling step comprises cooling at a rate of about 0.15ºC/minute to about 0.30ºC/minute.

~~32~~31. A thermal exchange implement, the thermal exchange implement comprising:

(a) the gel of claim 1; and

(b) a container, the container holding a quantity of the gel.

~~33~~32. A method of preparing a thermal exchange implement, the method comprising the steps of:

(a) providing a phase-change material;

(b) providing a gelling agent;

(c) providing a thermal exchange implement container;

(~~e~~d) mixing the phase-change material and the gelling agent at a first temperature at which the phase-change material is in a liquid state and which is below the flash point of the phase-change material and at which the mixture is not a viscoelastic liquid, whereby a non-homogenous mixture is produced;

~~(d) then, depositing the non-homogeneous mixture in a thermal exchange implement container;~~

(e) then, ~~while the non-homogeneous mixture is in the thermal exchange implement container,~~ heating the non-homogeneous mixture to a second temperature that is below the flash point of the phase-change material and at which the non-homogeneous mixture forms a viscoelastic liquid; and

(f) then, ~~while the viscoelastic liquid is in the thermal exchange implement container,~~ cooling the viscoelastic liquid to room temperature;

(g) wherein the heating and cooling steps are performed while the non-homogeneous mixture is disposed within the thermal exchange implement container.

33. The thermal exchange implement as claimed in claim 31 wherein the container is a flexible pouch.

34. The method as claimed in claim 32 wherein the phase-change material is at least one n-alkane.

35. The method as claimed in claim 34 wherein the at least one n-alkane is selected from the group consisting of n-tetradecane, n-hexadecane, n-octadecane, and mixtures thereof.

36. The gel as claimed in claim 1 wherein the gel consists essentially of the phase-change material, the gelling agent, and, optionally, a dye.